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Addresses, Essays and Discussions

THE ANNUAL ADDRESS OF THE SOCIETY BY THE PRESIDENT.

By C. P. Pruyn, M. D., D. D. S., Chicago, Ill.

Anniversaries are the milestones of life. The universal custom of observing them serves the practical purpose of gauging the distance traveled—either up or down—from the starting point. To-day the Illinois State Dental Society touches its thirty-fifth milepost of years, so to speak, and we pause here a moment to glance back on the long line over which we have come and to peer forward with hopeful eyes into that widening domain over which we are destined to pass.

The spirit of coöperation which, with steadily increasing power pervades this latter end of the nineteenth century, in no one way has shown more powerful and far reaching results than in the profession of dentistry in this country. In this day of fraternal conferences the mind can hardly credit the isolated and selfish spirit which obtained among dentists forty years ago. Each man's workroom was barred against his brother. Prejudices and small jealousies seemed to array one against the other. Lips were sealed lest some important method of practice might be revealed, and the darkness of selfishness prevailed throughout the country. The organization of dental societies has, to my mind, revolutionized the condition of the general profession. Among the pioneers in this work is this society in the State of Illinois, and the history of its attainments during its long life is an unerring gauge of the development of the profession at large for the last one-third of a century. When this society came into existence dentistry was just beginning to take its place as an independent profession. Professional jealousy and secretiveness was even greater here in the West than in the eastern centers, where years had given higher

tone of professional culture. Under these conditions the task of forming a State dental society was a harder one than any of us who live under present day conditions can truly realize. But those pioneer years of struggle have led to results of which we may well feel proud, for to-day we have a society which ranks with any in the world for practical work, and one whose published transactions are eagerly sought wherever dentistry has created an interest. Chicago may well be proud of the fact that it was here that our honored society was founded, and that out of the many local associations which have sprung from this parent stem, five of them are in this city, the Odontographic the largest of them all.

The year which we round out to-day has shown very little advancement in the art of filling teeth. And it may be said that dentistry was only one of the many activities which were stunned into inaction during the last twelve months by the intrusion of that dreadful monster, war. The art of healing is an art of peace, and it stands still and languishes when war's alarms are sounded and when man is at strife with his fellow man. The greatest advance during the year seems to have been made in prosthetic and in crown and bridge work, and in therapeutics. The steadily increasing attention given to bridge work incites me to make right here a strong plea for the more conservative treatment of the natural tooth crown. The improved methods of devitalization of the pulp and the filling of the pulp canal, and the comparative ease of crowning, have doubtless been the cause of the destruction of thousands of natural tooth crowns that might better have been filled and saved for many years of usefulness.

A better knowledge of alloys and the combinations of different metals for that purpose have, of late, attracted considerable attention. These helpful improvements are, as we know, the direct outcome of the researches of our honored confrère, Dr. G. V. Black. The makers of alloys have taken advantage of the results of these investigations, and as a consequence have given us a much better alloy than we have heretofore used.

We all must acknowledge with gratitude the improved methods of teaching in nearly all of our dental schools. The profession at large is under a deep debt of gratitude to our teachers of technique for the wonderful advance they have made in their special field of labor. The enthusiasm with which they present their cause, coupled with their healthy discontent with present attainments augurs well for the future.

We are to be congratulated that through the strenous efforts of our State Board of Dental Examiners, some amendments have been made to our laws restricting the practice to competent persons as follows: The license fee has been raised from $1 to $5, and the examination fee from $2 to $10. The fees thus obtained go to the State board to help defray the necessary expenses of the same.

During the last few months, there has appeared a speck on the dental horizon which some of us hope will be largly increased in size when next we convene. The idea is to have dentists under the auspices of the dental societies go into the grammer department of the public schools, examine the teeth of the children and give them instruction in oral hygiene. The salutary effects of this plan are far reaching. The removal of stigmata that are incident to the irregularities of the teeth; the preservation of the first molar; the impression upon the mind of the child while in its plastic period of the necessity of caring for its teeth; and the collection of data incident to such examinations are some of the benefits to be expected from this movement. This is a purely unselfish movement on the part of the dentists, and those who are to receive its direct benefits are of the next generation, and their children. But if a selfish side must be recognized, it is well to point out the fact that the schools would furnish the very kind of clinical work which is needed by our dental colleges. It is interesting to note the fact that since the Chicago committee has started this work, there have come inquiries from all parts of the world as to its methods so that similar work might be started in those countries from which came the questions. Already in many countries oculists have established this close connection with the people through the schools—and surely we, of all people, will be the last to allow that the teeth are less important than the eye in the tender period of youth. I appeal to you all, then, to give thought to this idea, and when it comes before you in practical shape for action, let me ask you to give it your support. In it we build for the future, and for it posterity will owe us a debt of gratitude.

One of the events of the last year which causes in us a keen regret is the defeat of the Rogers' educational bill. This bill seems to have included everything which was good and sufficient in the way of legislation for all literary and degree conferring

colleges. Religious misinterpretation and spurious colleges may be charged with its downfall. The fairness and the liberality of the measure was attested by the frequent conferences held between its proposers and certain opposing bodies. No amount of explanation could show that no religious discriminations were intended, however, and the bill, which might have worked so much good to our colleges, was killed. There will propably be presented to the next legislature a measure which will be similar to the Rogers' bill in its most important features, and we must profit by the experience of this winter and avoid those mistakes which were the cause of misunderstanding and defeat.

It is the earnest suggestion of your president that each and every member of this association throughout the State use to his utmost what influence he can bring to bear on the legislature from his district to secure support for this measure, so that when it is again proposed its success may be insured, and the dignity and character of our profession may receive an additional safeguard and strength.

This bill would effect one of the many changes which to my mind's eye the twentieth century holds for the profession of dentistry. The extension of the college course to four years and an increase in preliminary examinations are also desirable changes which the near future will hold. There will be improvements in both the art and science of dentistry and possibly the M. D. degree may be a requirement. All these things the eye of faith beholds, for judging by its past use and growth, the future of dentistry in America is full of unlimited promise and hope of progress.

The International Dental Congress to be held in Paris during the exposition of 1900 is an event which promises to give a strong impetus to the dental profession. America will, doubtless, be largely represented at this conference and our State of Illinois must not be among the missing. I strongly recommend that delegates with proper credentials be sent from this society, and would suggest that such appointments be made at this meeting.

And now there only remains for me to extend to you all a cordial welcome from the dentists of Chicago. This is the first time that our conference has been held in this city for twenty-seven years.

Chicago dentists are proud to have you here and extend to you the cordial hospitality of their offices and homes. It is to be

hoped that you will visit their offices as much as possible and witness their methods of doing things. You may be sure of a hearty welcome in all directions.

In closing I must express the hope that this present meeting may be distinguished by that harmony and fraternity which have characterized all our gatherings. A thing of which we can be justly proud is the absence from strife and dissensions in the life of this society. Differences of opinions are unavoidable in such a large body of progressive men; but, in this case, each "reverences the other's reverence" and a common loyalty and enthusiasm seem to hold us in bonds that are unbreakable. May this condition continue with us, for it is the *sine qua non* of progress and of that higher growth for which we are all striving.

DISCUSSION.

Dr. C. E. Bentley: I am more than embarrassed, I am overwhelmed by the implied compliment contained in the request to open the discussion on so able a paper as the president's address. I think there are men here who are older and more qualified to discuss it than myself. But I certainly would be untrue to my emotions had I not some words of commendation for the principles enunciated and the sentiments expressed in this paper. The president has touched on a good many things, some with which I am not very familiar. But there were two thoughts advanced in the paper that are particularly near to me—one in relation to the Rogers' bill. This bill, within the last twelve months, has appealed to me in a very striking manner. It happened to be my misfortune, possibly, to have been drawn into the vortex of this conflict, and I happen to know something personally of the fight that was made for and against that bill. Be it said for the bill, with all its shortcomings, it was the most consummate piece of work calculated to elevate the profession that was ever given to the State of Illinois for passage in our legislature. Unfortunately, there were some misinterpretations regarding its status that could not be swept aside. Another thing—I blush for shame when I say it—was that there was not the usual amount of persuasion, the necessary amount of grease, so-called, in order to interest some of those men who make laws in our State legislature. But this matter is not dead. The men who were interested in that affair are determined to make an impression upon the legislature to influence education in this State some day, somewhere and somehow.

The other thought that I am particularly interested in is the movement that has been recently inaugurated in one of our dental societies for the purpose of getting dentists into our schools and having them recognized by the Board of Education for the purpose of examining the teeth of children in the grammar departments. I need not cite to this body the good and far reaching results along the line of humanity when some such system as that is inaugurated. An effort has been made in an inexperienced way and a rebuff has been given, but we have profited by the mistake and now we are organized. We are preparing literature to be sent all over the civilized world in communities of over one hundred thousand inhabitants for the purpose of gathering data from men who are interested in education along this line of thought. This committee, which originated in Chicago, has already received communications from various parts of the world as to their method of procedure, and it is a little surprise to the committee in Chicago that a thought of this kind, which was considered to be original with us, had been thought of and is being thought of and acted upon in other parts of the world. I have been written to on this matter that the children of St. Louis are to be subjected to the examination of dentists, recognized by the School Board of St. Louis, for the purpose that has been enunciated in the address. Children in the city of Toronto cannot enter the public schools without first having had their teeth examined by a dentist and a certificate of the same given to them. In Buda-Pesth, and a little town in Germany (Würzburg) this system has been inaugurated with great profit. Those of us who are interested in this work have read Dr. Bonwill's history of his travels through Europe, and certainly remember the wonderful description he gave of the little town of Würzburg and the wonderful results that are being brought about by this system. I received a letter from California the other day asking as to the methods we were employing and requesting us to give all possible data for the purpose of creating a similar system there. It is the object of the committee to gather all possible data from places throughout the civilized world and to present it to the Board of Education of this city, and give them the results of what has been done by others, thereby presenting them with an incontrovertible argument for the necessity of having this thing established. Some members of the committee have received the personal assurance of some members of the Board of Education

that when such a thing has been accomplished their coöperation will be given, and certain representatives of the press have given similar encouragement.

These two thoughts have been aptly treated by the president, and I think they are well worth the careful consideration of this body.

Dr. A. W. Harlan: The president's address is its own best discussion, because it has touched on so many topics of interest that, it seems to me, one of the recommendations in the address ought to be acted upon, and that is with reference to our being represented at the dental congress in Paris next year.

The question discussed by Dr. Bentley, especially, with reference to the examinations of the mouths of school children, is one of great interest. It has been agitated in England for many years and a great deal of work in that line has been done by Fisher, of Dundee, and Cunningham, of Cambridge, and recently the Colonial Office of Great Britain has appointed a dentist to specifically examine the mouths of recruits for service in the various colonies of Great Britain, which is a step to having dentists in the army and navy. As to the recommendation in the address about congresses, I would like to say further that the director-general of the Paris exposition has recently announced the officers of the congress, and the International Dental Congress is to be one of the official congresses of the government. On the 12th of April last the government representative, Dr. Gariel, presided over the first meeting of the various commissioners, so that this or any other dental society in the United States or anywhere else in the world need not have any fear that it will be a purely voluntary matter, as the government is sponsor for it in every particular. In fact, I have a communication in my pocket that will be presented later, urging that this society make an effort to be well represented at that congress.

Dr. J. H. Smyser: I wish to say with reference to that part of the address concerning the amendments to our present law, in addition to what has been said, that we can now prosecute illegal practitioners of dentistry. Under the new law cases can be brought before any court of competent jurisdiction instead of by indictment or information. Under the old law the fees accruing from such a suit went to the school fund instead of to the State board as the law is amended. The fee is raised from $25 to

$100, and the money accruing from the prosecution, the penalty or fine, goes to the State Board of Dental Examiners.

Dr. C. N. Johnson: I have sitting on my left Prof. Watling, of Ann Arbor, and I am sure the society would be glad to listen to him.

Professor Watling: I do not know that I can add anything to what has already been said of this able address. I was very much interested in hearing it. I am not at all familiar with the topics it touches because of living in another State. I am, therefore, not competent to discuss it.

Dr. E. J. Perry: I have talked with several representatives in our State legislature at various times in relation to a dental law, and they have asked me what I wanted a law for. Well, in my unsophisticated way I have told them we want to build up the dental profession and protect the people from imposition. This is a wrong way to go at members of the legislature to get such a law passed, in my judgment. The dental profession has no right to protection by law, in my judgment. If we have a law passed in this State it will simply be a police regulation, and it is the intent of the law to protect the people; the building up of our profession is simply an incident in the minds of the legislators. No law would be allowed to stand upon the statute books that is not placed there for the specific purpose of protecting the people, and if that law incidentally upholds the dignity and character of our profession in the community, well and good. But this feature should be held from view when asking for legislation. All these matters are police regulations. Laws are presumed to protect all the people.

I am very much gratified to know that the profession has taken hold of the matter of examining the teeth of children in our public schools. We have no right to examine the teeth of these children from any selfish standpoint, unless it is for the purpose of doing good to the people, of protecting the children from the ignorance of their parents, or educating them for their own good, not for personal or professional recognition.

Much has been said and written with regard to our being a learned profession and about the public not appreciating us. It is my opinion that if we are not appreciated, it is our fault. I believe the public measure us up fairly well, and I am one of

those who think that the public size up the situation about right in the long run.

Dr. G. M. Brunson: I think this step of examining the teeth of children in our grammar schools is in the right direction, but we should go a little further. It is educational to the parents of those children if they could have relief as well. So many parents, even intelligent people, do not appreciate how soon the permanent teeth are erupted. If we could educate the parents to the importance of this subject, it would do considerable good.

Dr. Ira B. Crissman: I believe the president in his address overlooked one point, and that is with reference to free dental work for the worthy poor. This is a step in the right direction if carried out to the full intention. I have given considerable thought along this line. It has been on my mind for many years, and I believe it was suggested by a paper before the Odontographic Society by Dr. Gramm, and an organization was formed, but they did not go far enough. The establishment of a certain number of free dental infirmaries is not sufficient. We have a class of worthy poor in the City of Chicago that needs our attention. In fact, we have them in all large cities. The colleges have endeavored to do something along this line, but have fallen far short of the goal of perfection. It is well known that our dental colleges, through their dental infirmaries, charge for operations performed and get a good price for it; and they lie when they ay they do the work for the cost of the material. I say this with all due respect to the colleges, and they know it is true; and when men get up and lecture on oral hygiene and instruct students not to advertise, etc., they are simply going against their own interests and inoculating their students with good theory but poor practice. Through the dental infirmaries that have been organized in connection with the associated charities we may hope to get hold of and care for a certain class of the worthy poor. It is well known that there is a class of people in the City of Chicago who cannot afford to pay even a small amount to have their teeth filled who are suffering and should be attended to. The children of this class of people are the greatest sufferers, and should have the best care. I believe if the dentists in this city will organize themselves and establish free infirmaries in their respective offices for the care of the worthy poor, not for their own personal aggrandizement or for the purpose of having a puff

in the newspapers, they will accomplish a vast amount of good in this direction. Through the associated charities these worthy poor can be sent to the various dental offices. I devote Thursday afternoons from half past three to half past five, and furnish my own material, to this work. Some of these patients may be able to pay a little for the material used. Allow them to use it for car fare. We know very well that as these neglected children grow up they suffer from many ailments because their teeth have not been cared for. In regard to this work in our office, I claim you can give better service to your infirmary patients. The surroundings in a public infirmary are not very conducive for a fellow to do good work ; also he loses valuable time going to such a place which had better be occupied in work. If the patient is too poor to pay car fare let the dentist pay it—same amount he would spend going to and coming from a distant point.

BACTERIOLOGICAL INVESTIGATION OF PULP GANGRENE.

By Geo. W. Cook, D. D. S., Chicago, Ill.

For want of a more accurate term, I have used the word gangrene to designate the conditions found in pulp canals in which the pulp tissue is dead and undergoing putrefactive changes. In surgery, gangrene means the death of tissue *en masse*, instead of molecular death. Whether this is true or not respecting the death of the pulp, we know that when opened into the pulp is dead, so it differs little whether it has undergone death *en masse* as in true gangrene or has undergone molecular death as in ordinary inflammatory processes.

The immediate cause of gangrene, whether the process is induced by inflammation or otherwise, may be said to be any agent which is capable of destroying the vitality of the tissues, or cutting off their nutrient supply. The agents capable of inducing one or both of these conditions are very numerous. But as in inflammatory processes, practically, we have but one cause, viz., bacteria. To be sure the vitality of the tissues may be lowered by many agencies, so that the bacteria may gain an entrance, but having once gained an entrance into injured tissue, or tissue of low vitality, inflammatory processes are at once established which may result in resolution, or, if carried further, result in death of the parts, gangrene. So in considering the cause of pulp gangrene, we must consider it from a bacteriological standpoint, that is, study its bacteriological cause.

Before going further with the main question, it might be well for us to consider the working of bacteria in a general way. In nature, all proteid substances, which constitute the chemical bases of all living matter, as soon as the life phenomena ceases, readily breaks up into simple inorganic compounds or elements from which it was formed, viz., N, H, O, together with certain metals. The energy necessary for the building up of the complex proteid molecule as it exists in plant and animal life, is primarily derived from

the heat of the sun, and is purely a synthetic process. The opposite chemical change which takes place in dead nitrogenous matter is analytic, that is, the complex molecules are broken up into a number of simple molecules as NH, CO and HO. This process is sometimes called oxidation and implies the union of oxygen with the decomposition products as they are formed. The carbon unites with oxygen to form CO and the hydrogen unites with oxygen to form HO. In nature this process is known as putrefaction, and is simply the series of changes gone through by the complex nitrogenous molecule in its passage to the inorganic state, or as it exists in nature, viz., NH, CO and HO. In putrefaction it is known that bacteria cause the decomposition, and the products subsequently unite with oxygen.

Doing this work we have a class of microörganisms generally called putrefactive bacteria. They are saphrophites, that is, they live best on dead nitrogenous matter, causing its decomposition.

During this process of decomposition of proteid matter by bacteria there was necessarily many intermediate products formed, among which are certain crystalline bodies of a basic character called "ptomaines." These bodies contain nitrogen and chemically resemble the vegetable alkaloids. Some are poisonous, but according to Vaughan and others, by far the greater number are inert. It has been commonly thought, and even taught, that disease symptoms were due to the formation of ptomaines in the body of bacteria, and that all disease exciting germs formed its characteristic "ptomaine." This is true only in part. Ptomaines are formed by putrefactive bacteria, and as these bacteria are found in many abscesses and suppurating wounds, etc., breaking up dead tissues, it often happens that their poisonous products are absorbed and give rise to certain symptoms and conditions as high temperature, headache, and, if absorption continues, may end in collapse and death. But ptomaines are not the cause of any special set of symptoms, but simply act as poisons, just as strychnine or morphine act as poisons. But we have a second class of microörganisms which are capable of invading living tissues and lead parasitic lives. This class includes all pathogenic bacteria, and, as a rule, they are not capable of inducing putrefaction. These bacteria elaborate poisons very different from the putrefactive "ptomaines." Their products are not crystalline, not basic bodies and chemically have no relation to the alkaloids. They are supposed to be albumin-

ous bodies, and are commonly called toxins or toxalbumins. A good example of these bodies is snake venom. Bacteria causing certain diseases, as diphtheria, tetanus, etc., elaborate their own characteristic toxin which causes characteristic disease symptoms. The point we wish to make clear is that ptomaines are not the products of pathogenic bacteria and can in no sense of the word be looked upon as the cause of any disease.

It might be well just here to state briefly how bacteria after having gained an entrance into the pulp canal, set up their destructive work which if continued, results in the death of the part.

Bacteria. The question arises in this connection why it is that certain bacteria which are very frequently found in the saliva leading to all appearances a saprophtic or nonpathogenic life suddenly change to a parasitic or pathogenic life producing various diseased conditions. The only explanation we can offer is that set forth by Hueper. He advances the idea that there are certain "disease stimuli" or liberating impulses as they are called in the inorganic sciences. In normal life processes we may speak of the particular stimuli that evoke disease as excitants of disease, just as Liebig spoke of the excitants of fermentation.

Through a depression of the physiologic organization and consequent lowering of the resistance, normal physiologic stimuli may become disease stimuli, or the organization and resistance remaining the same, a normal stimulus may become more intense and be converted into a disease stimulus, in other words, the stimulus may come into play only quantatively.

This theory explains very nicely how bacteria may live in the saliva purely as saprophites, exerting a stimulation of the tissues of the mouth corresponding to the resistance of the tissue; but lower the vitality of the tissue and the bacteria at once become a disease stimulus and may set up all sorts of pathologic conditions, or the tissues may remain the same, and the same condition may increase the activity of the bacteria, and they at once pass from a normal physiologic stimulus to a disease stimulus and become disease excitants, just as the yeast plant is an excitant of fermentation.

Taking up the consideration of the bacteria found in the mouth, and which at times seem to be active factors in the causation of certain diseases of the mouth and especially of the teeth, we must confess they are very numerous; so numerous, it is very

difficult to determine whether one kind of bacteria is involved in the causation of a certain pathological condition or many kinds. In pulp gangrene or in pyorrhœa alveolaris the question naturally arises, what microörganisms are the main factors in producing these conditions ? Here it is exceedingly difficult to determine whether one or many are involved in the work of first acting as a disease stimulus upon tissue of low vitality, and afterward of disintegrating the tissue causing putrefaction. A very plausible explanation is that some one form of bacteria first takes on the function of a disease stimulus causing an irritation of the tissues which tend to lower the vitality to such a degree that the process soon becomes a mixed infection ending in the death of the tissues, followed by putrefaction.

Speaking more particularly of pulp gangrene, it is well in this connection to stop and consider the different kinds of bacteria which are found in this morbid condition. While many of the ordinary putrefactive bacteria are found in dead pulps, I wish to call your attention to a microörganism already described by Arkovy, of the University of Budapest, who has been working some very interesting facts connected with the bacteriology of caries of teeth. He has described a microörganism which he claims is so constant in pulp canals as to justify the name bacillus gangrene pulpæ. He claims to have found this bacillus in great majority of cases of pulp gangrene and ascribes to it the cause of pulp gangrene. About two years ago I isolated this same germ thirty-four times from pulp canals in which the pulp was gangrenous and undergoing liquefaction. I experimented considerably with it at that time, inoculating pulps of teeth, and settled to my own satisfaction that although the bacillus under normal conditions lived a saprophytic life in the mouth, under conditions of lowered vitality of the pulps it could become a disease stimulus and excite pulp gangrene.

Investigators along this line have described quite a number of germs, all of which seem to be able at times to cause disease of the pulp. (1) The proteus vulgaris described by Heiner. (2) The bacillus proteus littales described by Babes. (3) A bacillus found in putric bronchitis described by Barnabei and Babes, and (4) Babes has described the bacillus septicus ulna, which he found in a fatal case of ulceration. While all of these have been found in pulp gangrene, the investigations are not sufficient to prove their identity as a cause of pulp gangrene. Biondi has also

described a number of germs, but further investigation does not prove their connection with any disease of the teeth.

During the past two or three months I have made a number of experiments with the bacillus of pulp gangrene first described by Arkovy, and which he claims would produce pulp gangrene, but would not form pus—the pus formation which accompanies pulp gangrene being due to a mixed infection. I made eight inoculations of this germ into pulp canals, and in seven of the cases I found the germ in pure culture. But differing from Arkovy, I found pus in every case. In six other cases which were inoculated with pure culture, I found contaminated with the micrococcus gingivæ pyogenes, which is a microörganism of quite pronounced pathogenic powers. Three of the cases were suffering with a gingivitis of a very pronounced type.

I will give the analysis of forty cases, all of which were opened into under as near antiseptic conditions as possible :

Staphylococcus pyogenes aureus, I found nine times. Staphylococcus pyogenes albus was found seven times. Bacillus gangrenous pulpæ was present thirty-four times. Streptococcus pyogenes was present thirteen times out of forty. Bacillus pyocyanus, twice. Sacina lutea, six times. Bacillus dental viridaus, three. Bacillus pyogenes Fetoedus, twice. Bacillus teneus sputigenus, three times. Bacillus ulna (Vignal's) once.

I found a tetrad form of coccus which was pathogenic.

About the only conclusion we can draw from the work done thus far on the bacteriological cause of pulp gangrene is that no one microörganism is wholly concerned in the causation of the disease. It seems that a number are capable of producing death of the pulp. In this respect pulp gangrene is similar to various other diseases due to bacteria, but to no one particular bacteria or microörganism, any one of a number being able to act as a disease stimulus exiting the pathological condition.

DISCUSSION.

Dr. A. H. Peck (opening discussion) : I have not had time to look Dr. Cook's paper over sufficiently to make a thorough discussion of it. The paper is especially interesting to us because it indicates on the part of the essayist the execution of a large amount of labor. I know something of what it means to do original work sufficient to be able to present a paper such as you

have just heard; and when we remember that the author has in the past year read two or three other papers of equal scientific importance, we can realize that he has done and is doing a large amount of work.

In regard to gangrene, he states the definition as meaning the death of tissue *en masse*, which, of course, is correct, but his application of it to the pulps of teeth, in one sense, perhaps, is not well taken. He has failed in my judgment to make the application sufficiently clear. We must remember the fact that very many pulps of teeth die which do not pass through an inflammatory process, strictly speaking. It is generally accepted by pathologists that in order for the inflammatory process to run its course in the pulps of teeth, the pulps must have been previously exposed by the process of caries, so that microörganisms and their poisonous products have direct access to them. We know that many pulps of teeth die that are not exposed, and which have not passed through the inflammatory process, but rather the hyperemic process, and the pulp has died because of an embolus which has lodged in the blood vessels, no doubt, at the apex, thus cutting off the circulation of the blood, and when pulps die in this manner they die *en masse*. Death is brought about very suddenly, and in these cases we could properly refer to them as being gangrenous. At the same time, we open into the root canals of teeth containing dead pulps which contain no microörganisms whatever, hence the point I am trying to make plain is that in all cases of gangrene, as applied to the pulps of teeth, the microorganisms may not be, and in many cases are not present. When the death of a pulp is brought about by their influence, has run the course of the inflammatory process, it is, strictly speaking, a molecular death of the pulp rather than death *en masse*, because the suppurative process is inaugurated, and the tissue is invaded and dies, we might say, molecule by molecule, or a small portion at first being affected by the pathological process, this process progressing until finally the entire pulp is overcome.

It may be of interest to some of you to state that if the literature on this subject is looked up thoroughly, you will find that our own Dr. Black was the first man in the realm of pathology to call attention to the fact, as stated in the paper, that the ptomaines of these various forms of microörganisms resemble in the abstract the vegetable alkaloids.

In regard to the ptomaines not inaugurating special sets of symptoms in pathological conditions of the system, that is true, it being accepted as a fact by pathologists generally. But I think Dr. Cook is wrong in drawing a parallel comparison between this action or nonaction, if you please, and drugs like strychnia and morphia and others of like nature, for it is well known in the realm of materia medica that decided sets of symptoms—symptoms very marked in their manifestations—are nearly always inaugurated by such poisonous drugs as have been mentioned.

Dr. G. V. Black: This is an exceedingly interesting subject, and I wish we could have all papers of like character, and particularly do I wish that we could have more well written papers upon the subject of bacteriology of the mouth. Very few men have taken up this subject as a branch of science and continued its study—a subject which to us as dentists is of very great importance. It would seem, counting the years back previous to the time when Miller made his investigations of the microörganisms of the mouth, that we should have many men who would have studied these microörganisms, particularly the ones that habitually inhabit the human mouth, and it seems that we should have known them very well to-day, but such is not the case. We are still uncertain as to the microörganisms ordinarily inhabiting the human mouth. Miller has isolated very many; many others have done the same, but generally without very systematic study of the individual microörganisms that are undoubtedly habitués of the human mouth. As we go back and forth we take into the saliva saprophytic microörganisms continually; they dwell there for a while and are thrown out; they do not remain there. All kinds of microörganisms are brought in. I may say, frequently pathogenic microörganisms are brought into the mouth in this way that do not belong there. I wish we could have some such men as Dr. Cook, or others, or a number, who would cultivate these microörganisms until we can understand and know what microörganisms are habitually in the mouth as separated from those organisms accidentally in the mouth.

Dr. Cook has spoken of forty cases in which he has examined dead pulps—to me the most interesting part of his paper. It seems he has found in these pulps the staphylococcus aureus and albus a considerable number of times. In taking microörganisms from healthy mouths three years ago and cultivating them, I found the

staphylococci in half of the mouths; at other times I would go through the session and find only a few in the number of cases examined. They are pathogenic microörganisms. One thing which struck me as remarkable was this, that he found the streptococcus pyogenes thirteen times in forty cases. This is a virulent microorganism; it is pathogenic, very decidedly so, a microörganism which we usually find in carbuncle and serious suppurations of that nature. I have not found that organism in the human saliva but two or three times in all the cultivations I have made.

I want to speak of the apparent use of the terms parasitic and saprophytic. We may have parasites that are not pathogenic; we have parasites living in the saliva that are apparently non-pathogenic; at least, we cannot yet ascribe to them pathogenic qualities. They are strict parasites, however; we cannot cultivate them; they do not grow anywhere else except in saliva; they will not grow on gelatine plates or in bouillon. Saprophytic microörganisms you can cultivate on ordinary media; they live habitually on dead material. We have a number of strict parasites inhabiting the oral secretion, some five or six varieties. From my own study of the microörganisms of the mouth I should say that we can nearly count the habitués of the human saliva on the fingers of the two hands. All the rest that we find there are accidental, and will not remain there unless the conditions are abnormal. But if pathogenic organisms are present, and there is a break, if a pocket is formed in the tissues into which pathogenic microörganisms can enter, they will manifest their pathogenic qualities, and trouble will arise, but not before.

As to ptomaines and leucomaines, and all of that family of maines so-called, and the divisions of these from the toxalbumins, I think it is generally considered that many of these products directly resembling the alkaloids in plants do produce disease, or are the active agents in producing disease. In typhoid fever, tetanus, and a number of diseases, the active poisonous principle, elaborated in the body by the growth of these microörganisms, is the direct agent producing the disease, and it belongs to this class. Not all of these, however, are crystallizable and basic in their character, and in that degree they fail to resemble the vegetable alkaloids. A toxalbumin is a different product entirely, and, according to Vaughan and Novy, it does not resemble the other poisons, but it is an albuminoid poison that is liberated only after

the death of the microörganism, and is the result of the solution of the dead body of the microörganism. Many of our most virulent poisons are liberated in that way, and their effects are not manifested until the microörganisms are dead. We account some diseases to these, the product of pathogenic microörganisms. But saprophytic microörganisms incapable of growing in the tissues may form toxalbumins which induce disease or poisoning by being introduced with food. Thus disease may be induced by decomposed food being eaten, as the poisons of ice cream, partially decomposed milk, etc., which cases are from this variety of poisonous compound. So it is not necessary for the organisms to be pathogenic in order that they may produce poison. It must be a parasitic microorganism producing poison in order that it may be pathogenic, then we may have a parasitic microörganism not producing poison, and it will not be pathogenic.

Dr. Cook (closing the discussion) : I am very sorry my paper did not create more of a discussion.

With reference to the question brought up by Dr. Peck as to the resemblance of poisonous products, mentioning strychnine and morphine poisons, I simply alluded to them, and not with a view to making any sort of comparison of the poisons. Oftentimes there is considerable misunderstanding in regard to the products liberated by bacteria, and a great many do not understand the difference, and I simply mentioned these in connection with this work.

With reference to ptomaines and toxins, in order to produce a ptomaine we have got to have a dead nitrogenous substance, according to the best authorities. As regards the toxins that are liberated, Dr. Black said that the microörganisms which produced them were parasitic in character, and that many were uncultivated, and many inhabited the human mouth, that were not pathogenic. Of course, if they live in the mouth and we cannot study them by the methods at our command for cultivating them, we cannot determine whether they are pathogenic or not. According to the law of Koch, we can only determine pathogenic microörganisms by their action. Toxins can be obtained from dead bodies, as it were, of the microörganisms ; they are liberated from the tissue by these microörganisms, and the microörganisms are not necessarily dead when the toxins are liberated. I believe Dr. Black mentioned that the toxins were liberated from the dead bacteria in

the tissues. I do not believe that the best authorities on bacteriology agree with him regarding that point.

Dr. C. R. TAYLOR: I do not get it clear in my mind as to whether a toxin is the product of bacterial life, or whether it is the bacteria itself, or whether it is the body of the bacteria.

Dr. COOK: A toxin is a substance liberated by the action of bacteria on albuminous substance. I believe this view is entertained by the best authorities. The toxins and ptomaines are very different substances and produce different symptoms in the body of the host.

I was in hopes that there would be more discussion on this subject. I wish to thank Drs. Black and Peck for what they have said on my paper.

THE STRUCTURE OF THE ENAMEL WITH REFERENCE TO CLEAVAGE AND THE LINES AND ANGLES OF CAVITY MARGINS.

By F. B. Noyes, D. D. S., Chicago, Ill.

In presenting this paper to you I do not expect to bring forward any new ideas or demonstrate any new fact. It is not the result of any original investigation, but simply a new demonstration of old facts, or perhaps better stated as a new illustration of old observations; for the illustrations are mine, most of them have been made in the last few weeks and especially for this meeting, never having been shown before.

Before going on I wish to say that in the preparation of these illustrations I am indebted to Dr. G. V. Black, who has given me free access to his collection of ground sections and constant and valuable assistance and suggestions and for whom they are intended as illustrations to be used in a work which he is preparing; also to my class in the Northwestern University Dental School, each student having ground two sections and left them with me as the permanent property of the histological museum of the school. This has given me the inspection of a large number of grindings and some very valuable specimens.

The structure of the enamel is unique in mammalian histology, in that the tissue is composed entirely of formed material, the living tissue which formed it having disappeared after the formation was completed. It is also the only calcified tissue formed by an epithelial or epiblastic organ, which is a distinction often lost sight of, and is in itself sufficient to put the tissue in a class alone. The shells of mollusks are also of similar character, but

differ very markedly from the enamel in the degree of classification which the organic matrix has undergone; the shell does not contain any living matter, though it has a large percentage of organic formed material which has not been calcified.

By microscopic study the enamel is found to be made up of rodlike structural elements or prisms, of more or (Fig. 1) less perfectly five or six sided outline in section and showing alternate expansions and constrictions in their length. (Fig. 2)

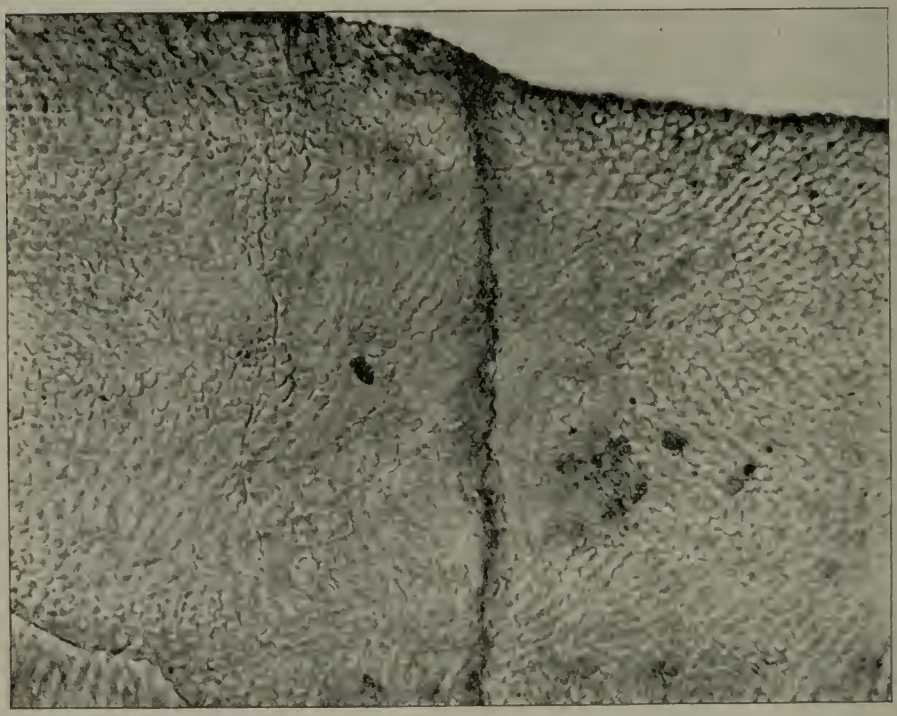

Fig. 1. Cross section of enamel.

As the prisms are arranged the expansions of the rods are opposite to the expansions of the adjoining rods and do not interlock with their constrictions, the spaces thus formed are filled with cementing substance which, in perfect enamel, is wholly calcified as well as the rods. In formation the rods grow on their ends only, and each expansion marks a new globule of partially calcified material which was added to the rod, the

calcification of which together with the cementing substance surrounding it being completed later.

Although the cementing substance and the prismatic substance are both perfectly calcified they show marked differences, chemical and physical. The cementing substance is much more rapidly acted upon by acids and is much weaker, at least to incisive force.

In structure the enamel may be compared, for illustration,

FIG. 2. Isolated enamel rods.

with such substances as fibrous woods, or possibly with certain igneous rocks which are made up of crystals in the form of long prismatic columns. When treated with solvents such rocks tend to break up into the columns, and when fractured they cleave in the lines of the columns, sometimes breaking across a few, but following the general direction of crystallization. When fibrous woods are treated with certain substances the interfibrous

substance is converted into pulp, the fibers resisting the action of the reagent. This is illustrated in the manufacture of paper.

The enamel rods or prisms run from the surface of the dentine to the surface of the crown, many of them probably without break (Fig. 3), but as outer surface of the enamel is much greater than the inner, either the rods must be much larger at their outer than their inner ends, or else there must be many rods which do not reach the surface

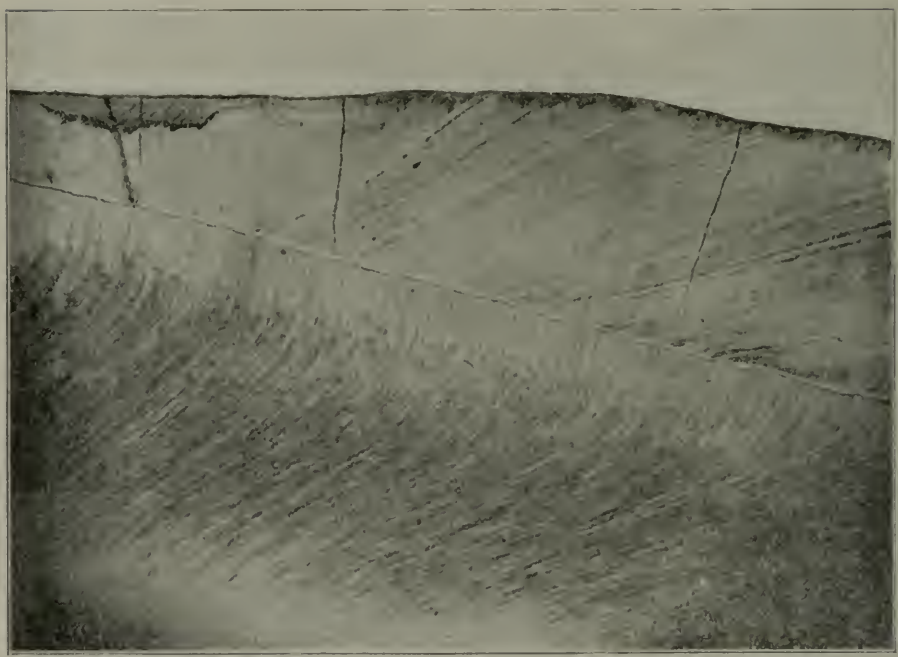

FIG. 3. Straight enamel. Labial plate of an incisor.

of the dentine. By examination we find that the rods are of the same size at their surface and dentinal ends, and the increased area is provided for by short rods which pass from the surface part way to the dentine, ending in tapering points between the converging rods which pass the entire distance. These are points exceedingly hard to show in photographic illustrations, because the rods are not straight, and individuals are hard to follow throughout their length.

The direction of the enamel prisms is generally described as perpendicular to the surface of the tooth, or in lines radiating from the center of the pulp chamber. This description is by no means complete, and we find very important exceptions, in fact, may almost say that in but few places is it exactly true; and the con-

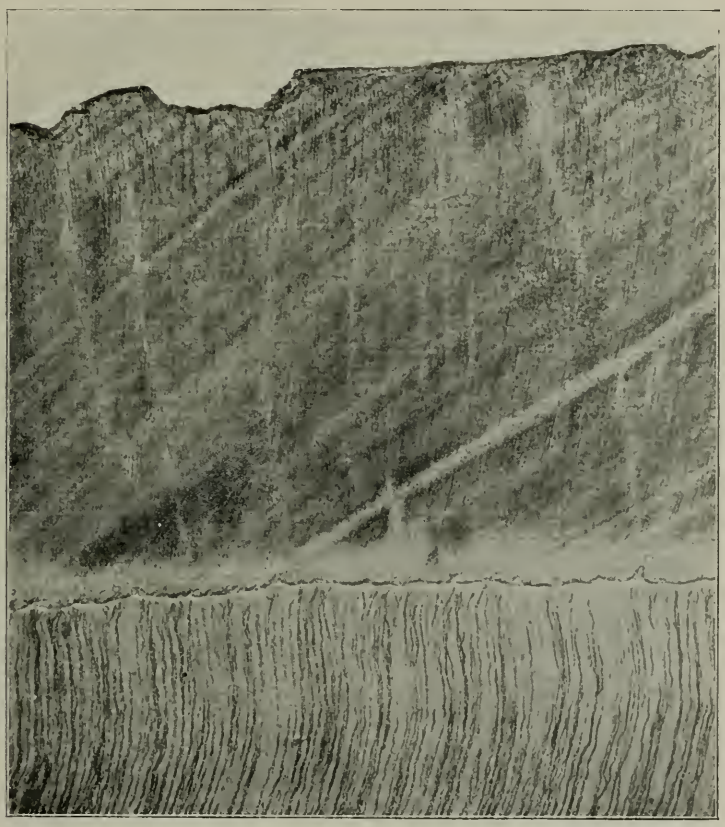

FIG. 4. Straight enamel, showing dento-enamel junction.

sideration of the direction of enamel rods in detail becomes a most important factor not only in securing proper conditions of cavity margins, but also in promoting ease and rapidity of operation.

Before going on to the consideration of the lines of cavity margins and their angles, I wish to speak of the principles of cleavage, and the requirements for strength of enamel margins.

In writing this paper I have used some terms which are still under discussion. For purposes of description I have used three planes, a horizontal plane and two axial planes. These Dr. Black defines (in a work not yet published) as the horizontal plane, passing through the tooth in a direction at right angles to the long

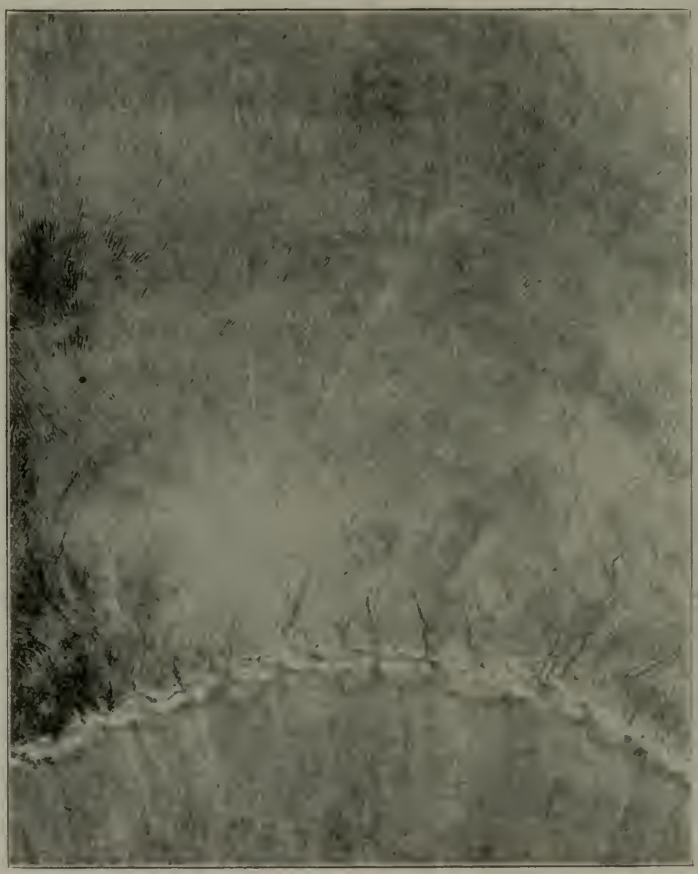

FIG 5. Gnarled enamel, showing dento-enamel junction.

axis of the tooth; the mesio-disto-axial plane, passing through the tooth from mesial to distal, parallel with its long axis and the central line of the crown; the bucco-linguo-axial plane, passing through the tooth from buccal to lingual, parallel with the long axis of the tooth and the central line of the crown; these are self-

defining terms, and for a long time have been used by the profession in practically the same form.

The surface margins are the most difficult things in the preparation of cavities to describe with exactness. A number of terms are in use and it is desirable that one be selected and used exclusively to make our nomenclature more exact, and to avoid confusion in description. The outer margin of the cavity, where the cut surface joins the natural tooth surface, has been called the enamel margin or enamel edge, but enamel edge is also used to

FIG. 6. Enamel rods, showing straight outer and twisted inner ends.

indicate the cut surface of enamel forming part of the cavity wall, in the sense of its being the edge of the enamel plate. The enamel margin is usually beveled, and enamel bevel has been suggested as term for the angle formed by the tooth surface and the cavity wall. There are places, however, where the enamel does not form a part of the cavity wall. Cavo-surface angle has been suggested as describing the angle formed by the tooth surface and the cavity wall. But one bevel is spoken of, the *cavo-surface bevel*. Walls

of cavities, both the dentine wall and the enamel wall, are spoken of as *inclined* toward or away from the planes of the tooth.

I shall use this term partly to bring it before you for discussion. The word which most exactly expresses the idea to most minds is the one which will last. They supply a need which I have felt for a long time.

Cleavage may be defined as the tendency of a given substance to split or separate in definite directions, as wood splits in its grains or crystals in their lines of crystallization.

FIG. 7. Enamel rods, showing straight outer and twisted inner ends.

In cutting away unsupported enamel the sharp edge of the chisel engages with the surface, penetrating to a very slight distance, and then the force applied at an acute angle to the direction of the rods splits it through more or less accurately in the direction of the rods, as ice is split with an ice ax. It is not that the instrument penetrates and separates rod from rod at all, but the sharp edge makes a scratch on the surface, as a diamond scratches glass, and then the force applied simply fractures the substance in the

lines of least resistance. How slight the force which is required to split enamel, when one has learned to recognize the lines of cleavage, is still continually a matter of surprise to me.

Unsupported enamel will almost always cleave if the force is properly applied, though the direction of the rods may not be straight, but if the enamel is supported by sound dentine we have a very different condition. If the direction of the rods is straight, (Fig. 4) and parallel with each other and a break has been made through the entire thickness to the dentine, it will split away in chunks with little force if properly applied. If the direction of the

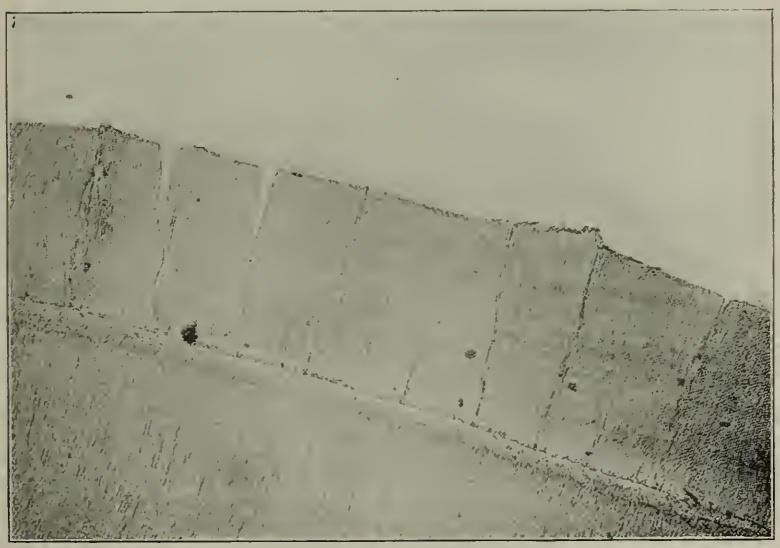

Fig. 8. Straight enamel rods, showing cleavage cracks.

rods is twisted (Fig. 5) and curled about each other, as we find them in many teeth, they will not split through to the dentine, but will break across the rods where they curl around each other, the outer ends of the rods being straight for a short distance in almost all positions (Figs. 6 and 7). This difference causes the very greatest difference in the feeling of the tissue to cutting instruments. There is as much difference in cutting a piece of enamel with straight rods and one with twisted and interwound rods as there is between splitting a piece

of straight grained pine and a cross grained hickory. There is no difference in the density of the two pieces of enamel; the "hardness," the structure, is no more perfect in one than in the other, and one will not resist the progress of caries any better than the other, but one will cut easily and the other will not. If the dentine can be cut out from under such gnarled enamel it will cleave through without much difficulty; but if it must be cut without this it can only be done by a planing motion of a very sharp and hard tempered instrument. In the latter part of the paper I will speak

FIG. 9. Drawing from a photograph, showing the plan of arrangement of the enamel rods. The crown of a bicuspid.

of the cleavage of enamel in connection with the formation of cavity margins.

The unbroken enamel is an exceedingly hard and strong substance; when dry it will often turn the edge of a well tempered steel instrument and you have probably seen it strike a spark in the mouth under the heavy use of an instrument not well directed, but when a break has been made in it it will chip away from the edges very easily. In this respect it may be likened to a pavement of hexagonal columns well cemented together. It is very hard to make a hole in it when coming down upon the perfect surface, but let the pavement be undermined or a break established and the columns can

easily be tipped into the break (Fig. 8). The enamel has been called a coat of mail for the tooth and if we consider the arrangement of its structural elements we find that the crown is constructed on a most beautiful plan, the principle being that of the arch.

Beginning at the gingival line the prisms are inclined

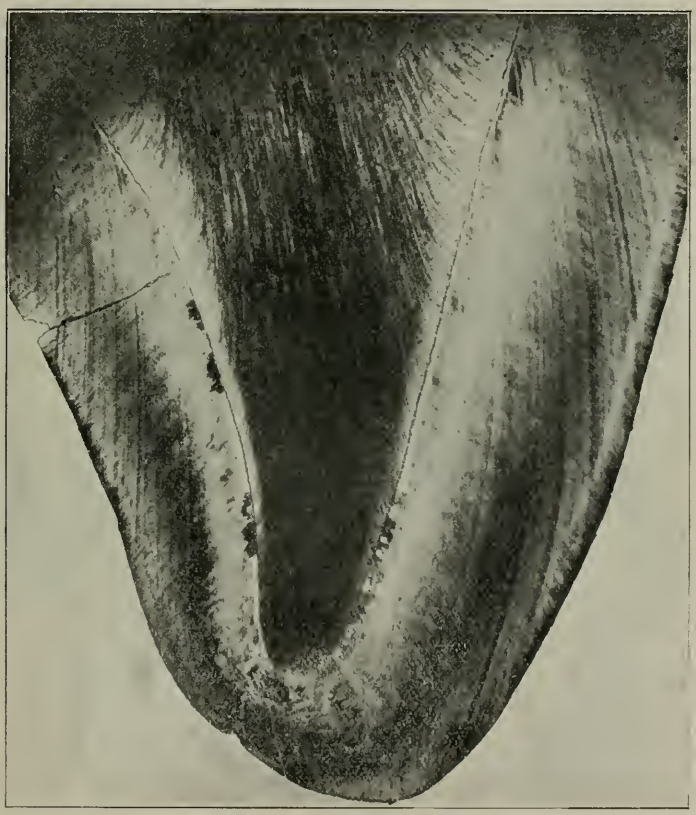

Fig. 10. Tip of an incisor, showing lines of stratification of the enamel.

apically from the horizontal plane often as much as ten to twenty centigrades (Fig. 9). Here the short rods rest against the dentine and are overlapped and supported by the cementum forming a buttress to the arch. As we pass toward the occlusal, in the gingival half of the middle third of the axial surfaces we reach

a point where the rods run outward in horizontal plane and are perpendicular to the surface of the enamel. Passing occlusally from midcrown the rods become inclined more and more, occlusally from the horizontal plane and toward the axis of the tooth as the cusps, marginal ridges, or occlusal edges are approached, so that when these points are reached the rods are running parallel with the axis of the tooth, and in these positions are almost always twisted and curled around each other to form the strongest possible kind of a keystone, and to support the short rods that must be

Fig. 11. Bucco-lingual section of a bicuspid.

placed in that position. Passing over the marginal ridge or down the central inclination of the cusp, the rods become again inclined away from the axis toward the groove or fissure, and where the two plates join the rods come together at an acute angle supporting each other.

The strength of this plan of construction is easily recognized and also the effect upon lines of cavity walls. For instance, on the occlusal surfaces of the molars and bicuspids, the walls may be cut parallel with the axial planes and note the resulting conditions of

the cavo-surface angle where stress will come on enamel rods forming the margin. The rods which form the cavity margin do not extend to the dentine parallel with the cavity wall but run off into the enamel forming an acute angle with the cavity wall. Beginning at the dento-enamel junction, (in the axial wall) we have short rods resting upon the dentine, and supported by the filling material

FIG. 12. The groove from the tooth shown in Fig. 11.

growing longer and longer as the margin is approached, all together protected by the filling material, sustaining the first rods upon which stress can come, like a buttress.

With the axial surfaces a very different condition exists. Suppose a cavity has been formed beginning at the contact point of the mesial surface of a bicuspid and has been prepared as a simple

cavity. In preparing the cavity the occlusal dentine wall is cut in the horizontal plane. The occlusal enamel wall must be cut away at an angle of twelve to fifteen centigrades occlusally from the horizontal plane in order to reach the inclination of the enamel rods, if the dentine wall comes at the junction of the middle and occlusal thirds of the axial surface. The cavo-surface bevel protects the

Fig. 13. Enamel margins, cutting out the groove shown in Fig. 12.

rods slightly and they have their inner ends resting upon sound dentine, but they are practically unsupported; the angle of the enamel wall cannot be increased or the bevel of the cavo-surface angle without making the edge of the filling material too thin for strength. The rods which receive the stress are supported only by the filling material, which is not sufficient; consequently we find in

practice that in such cases the axio-occlusal angle of enamel is very apt to break out, under the force of occlusion.

The tip of this incisor shows (Fig. 10) the direction of the rods very well. Notice how their direction approaches that of the axis of the tooth as the occlusal angle is approached and how far the angle with the surface varies from twenty-

Fig. 14. Enamel defect on the cusp shown in Fig. 11.

five centigrades. The curled and twisted condition of the rods at the tip is shown in this section and the lines of stratification of the enamel or the lines of accretion are beautifully shown; these are bands of pigment deposited with the lime salts and mark the lines of growth of the crown, calcification beginning at the tip of the dentine.

In considering the preparation of enamel margins we will begin with fissure cavities. This bucco-lingual (Fig. 11) section of a bicuspid crown shows a deep groove with but the slightest traces of caries; it is a position however where caries is very likely to occur and when it starts such grooves as these must be cut out to their extremity whether decayed or not. Before leaving this picture notice the point of imperfect structure at the cusp where caries has occurred. The little lines are checks in the enamel caused by the grinding and show the lines in which the

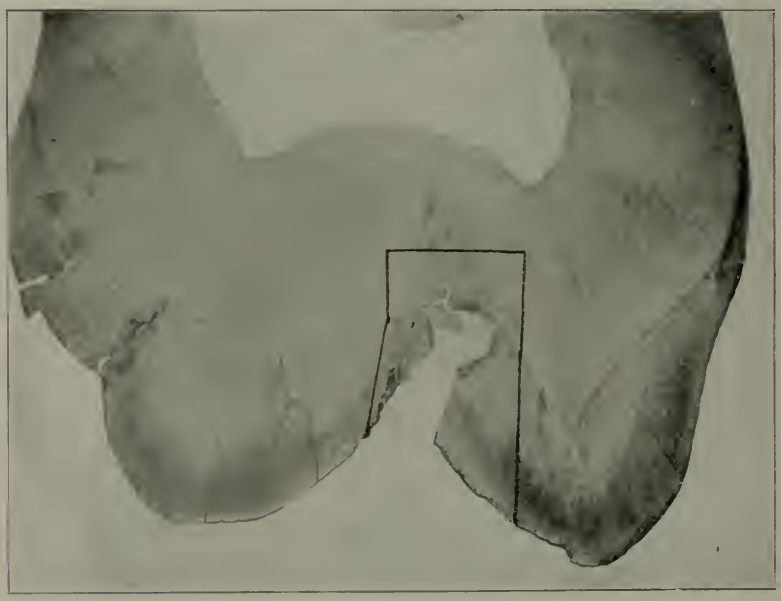

Fig. 15. Occlusal decay originating in the fissure.

enamel would cleave under the chisel. With a higher (Fig. 12) power they, as well as the rods, will show more clearly. In this view of the same fissure the enamel rods can be distinctly seen. If the groove has been opened by a small fissure drill a chisel will split the enamel away in the lines of these checks, but now the enamel wall must be planed away at the cavo-surface angle so as to make the wall in the same line as the dentine wall, that is the axial plane or at a small angle away from the axis. (Fig. 13). When this has been done the cavo-surface angle may or may

not be beveled, as the rods are supported at that point by the shorter rods which are covered bythe filling material.

Fig. 14 shows the defect on the cusp. The interprismatic substance has been softened and removed to a considerable depth so that the rods on the surface have broken out in grinding. Notice how they are gnarled and twisted over the tip of the dentine. In

FIG. 16. The fissure of Fig. 15, showing the caries of enamel and dentine.

preparing a cavity in a position like this the lingual wall would be easily found about six centigrades from the axis, where as you see, the rods are almost in the axis at their outer ends, but on the buccal wall the condition of the margin is not so easy to find. Feeling with the chisel at the margin the rods will be found short and inclined lingually from the axis but extending the cavity

margin buccally, and increasing the angle of the enamel wall till it reaches near six centigrades buccally from the axial plane, the margin will be found to leave the rods in good shape if it does not bring the cavity margin too close to the point of the cusp.

The next set of illustrations show occlusal decays originating in grooves or fissures. Fig. 15 shows the crown of a molar.

Fig. 17. The trimming of the enamel wall of Fig. 16.

The enamel was complete in this section when the grinding was begun, but a portion which was undermined has been broken out in the grinding. Notice the extension of the decay under the enamel and also the condition in the mesio-lingual groove. A higher power of the same (Fig. 16) will show the direction of the rods and the undermining of the enamel plates more clearly. In

preparing such a cavity the undermined enamel will split away very easily, the enamel rods running at an angle of eight to ten centigrades from the axis toward the groove. The enamel wall must be planed away so as to bring it into the axial plane or inclined slightly buccally from the axis, the cavo-surface bevel being cut at a slightly greater angle than the rest of the enamel wall. The

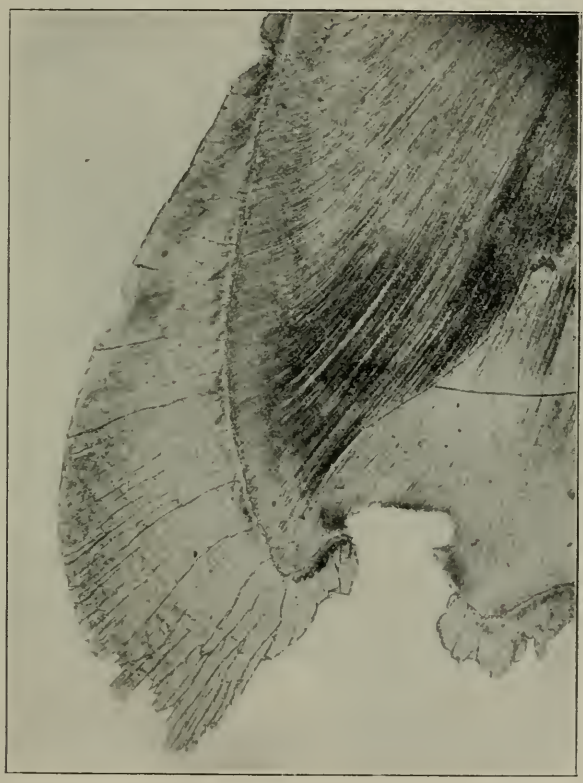

FIG. 18. Mesial enamel plate of a bicuspid, showing cleavage in the direction of the rods and an old cavity in the mesial pit.

lingual enamel wall must be cut at an angle of six centigrades from the axis or the dentine cut away farther to the lingual, and if cut at about six, the cavo-surface bevel is not necessary. Fig. 17 shows the lines of the cavity when prepared.

Turning now to the proximal sides. Fig. 18 shows the mesial

enamel plate of a superior bicuspid. The lines are checks for grinding, but they have followed very accurately the lines of the enamel rods. There was a small filling in the mesial pit. The margins were discolored and the photograph shows that caries had recurred around it. The occlusal enamel has broken away badly in the grinding. Cutting out a simple cavity in the mesial surface

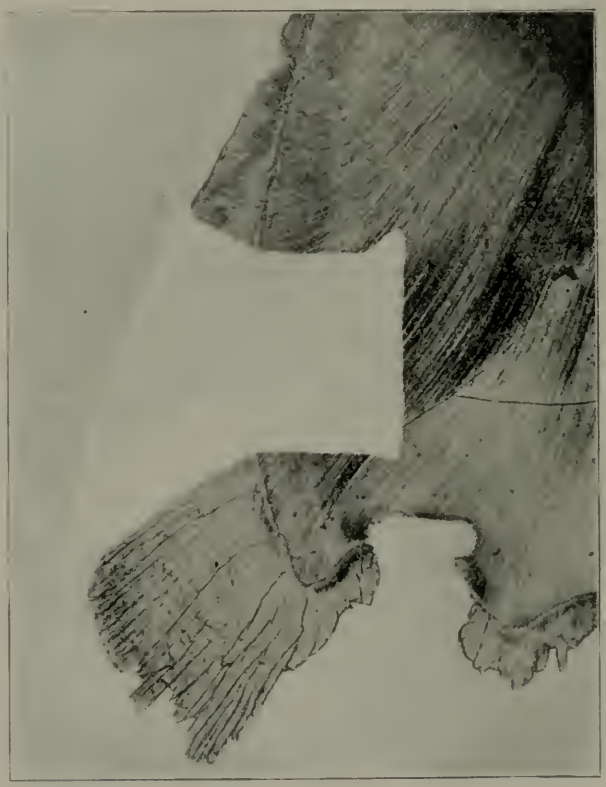

FIG. 19. The same, cutting out a simple cavity.

the enamel margins would have to be cut as shown in Fig. 19. The occlusal enamel wall would have to be cut at an inclination of twelve to fifteen centigrades occlusally from the horizontal plane to reach the direction of the rods at this point, then beveling the cavo-surface angle the wall is weak, but if it is not inclined occlusally as much as that, rods will be left with their inner ends cut off sus-

tained only by the cementing substance between them, and they will be loosened and broken out in condensing gold upon them. The gingival wall is cut at an angle of six or less gingivally from the horizontal plane, and then the cavo-surface angle slightly beveled.

Fig. 20 is interesting, showing two proximal decays which show the depth to which the action of the acids has penetrated. The one at the mesial contact point, the enamel appeared perfect when the grinding was begun, showing a slight discoloration, but

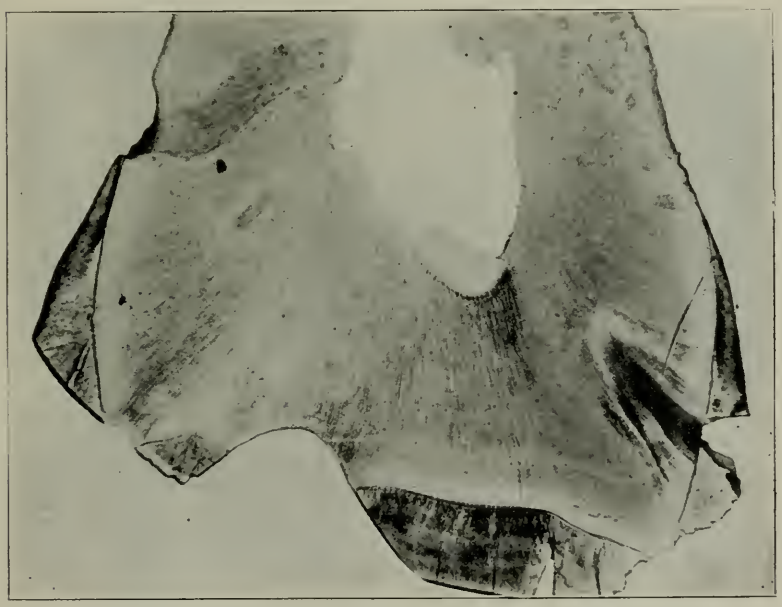

FIG. 20. Penetration of caries on proximal surfaces of a molar.

no impairment of the surface. That the cementing substance was acted upon, however, is shown by the way the enamel has crumbled away at this point, not breaking out in a piece, but crumbling away. The dark lines show the affection of the dentine at the gingival line of the distal surface the decay has scarcely formed a cavity the dentine has been affected all the way to the pulp chamber.

Fig. 21 shows the crown of a molar cut from buccal to lingual,

showing very imperfect fissures, and on the buccal surface a spot where a piece of enamel has broken out in grinding. This is in about the position of common buccal decays, and will show the conditions of the enamel margins. Taking a higher power of just that portion (Fig. 22), notice that at the gingival wall the rods are inclined gingivally from the horizontal plane, and at the occlusal wall they are inclined occlusally. Fig. 23 shows the cavity cut out.

Figs. 24 and 25. Similar conditions and preparation on the buccal side of the bicuspid.

Fig. 21. Molar crown in bucco-lingual section, showing defective fissures and the position for a buccal cavity.

Fig. 26 shows a section of a third molar with a large buccal cavity. The occlusal dentine wall would be cut out in the horizontal plane, but the enamel wall must be inclined occlusally at least twelve centigrades to reach the direction of the enamel rods and then the corner would be very weak, and the occlusion comes strongly on that cusp, as is shown by the abrasion. (Fig. 7.)

Fig. 28 shows a pit in a lateral incisor where a cavity has been

formed ; the undermining of the enamel plates and the conditions of the margins are shown fairly well. In opening up the cavity the undermined enamel splits away with one or two strokes of a chisel. The lingual enamel wall, after cutting it away till sound dentine is reached, is cut in about the horizontal plane and the cavo-surface angle beveled at from three to six centigrades gingivally from that

Fig. 22. A portion of the buccal side of Fig. 21.

and extending back about a fifth of the thickness of the enamel wall. The occlusal enamel wall must be inclined about ten to twelve centigrades occlusally from the horizontal plane, and the cavo-surface angle beveled.

Fig. 29 shows the gingival enamel margin only and the undermining of the lingual plate and 30 the margin trimmed.

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FIG. 23. Fig. 22, cutting out the cavity, showing the trimming of enamel walls.

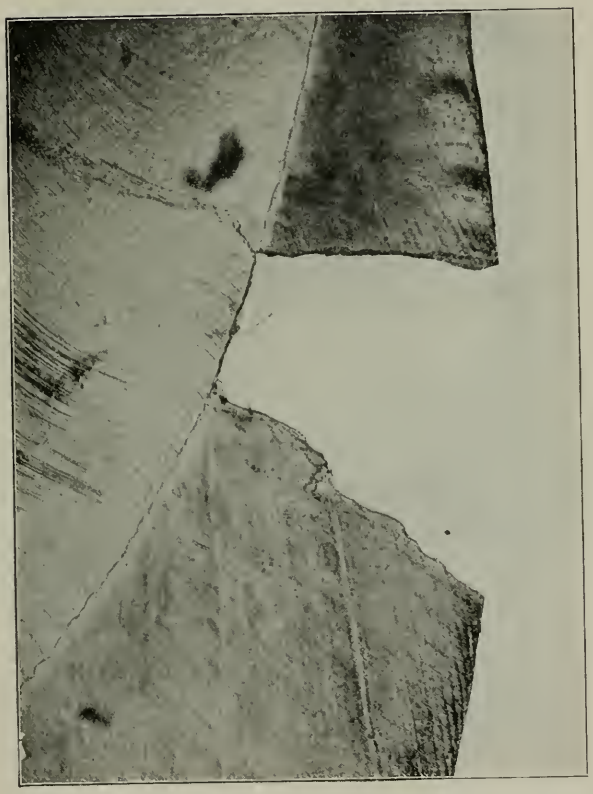


FIG. 24. Portion of the buccal enamel plate of a bicuspid.

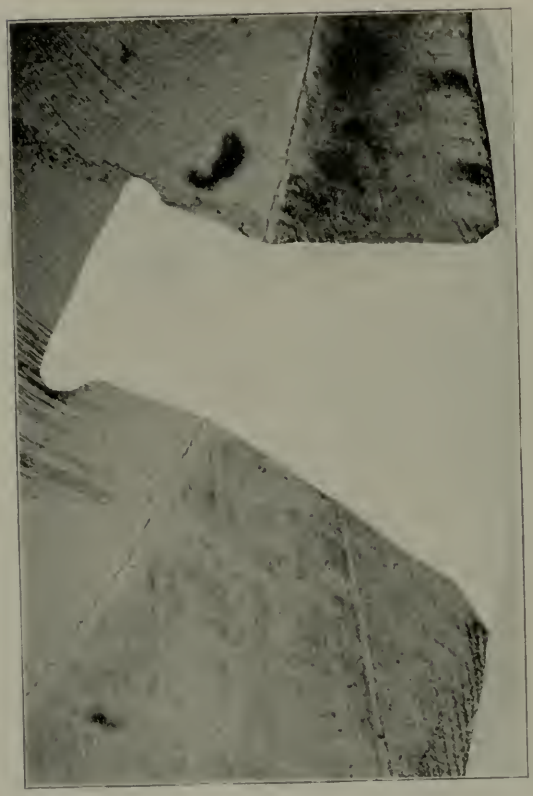


FIG. 25. The preparation of the enamel walls of Fig. 24.

FIG. 26. Bucco-lingual section of a superior third molar with extensive buccal cavity.

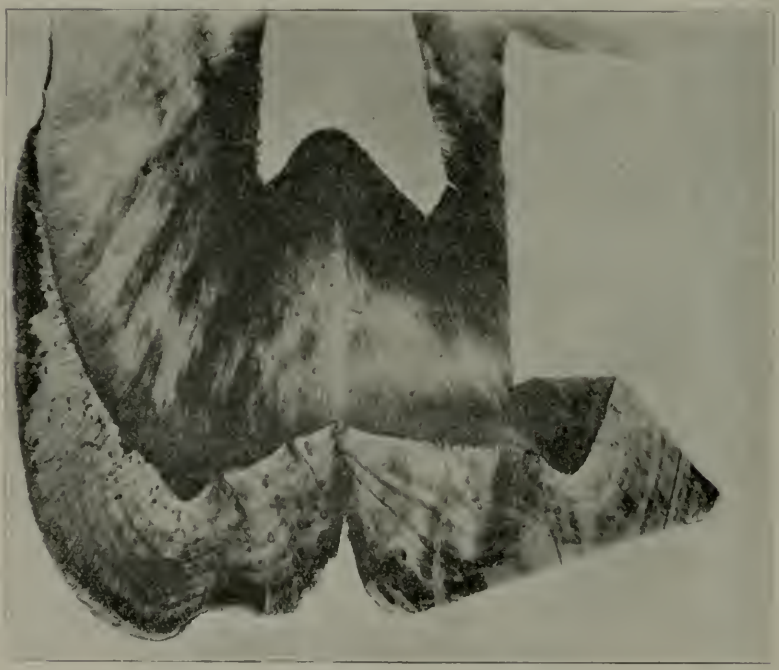


FIG. 27. An attempt to prepare the cavity shown in Fig. 26.

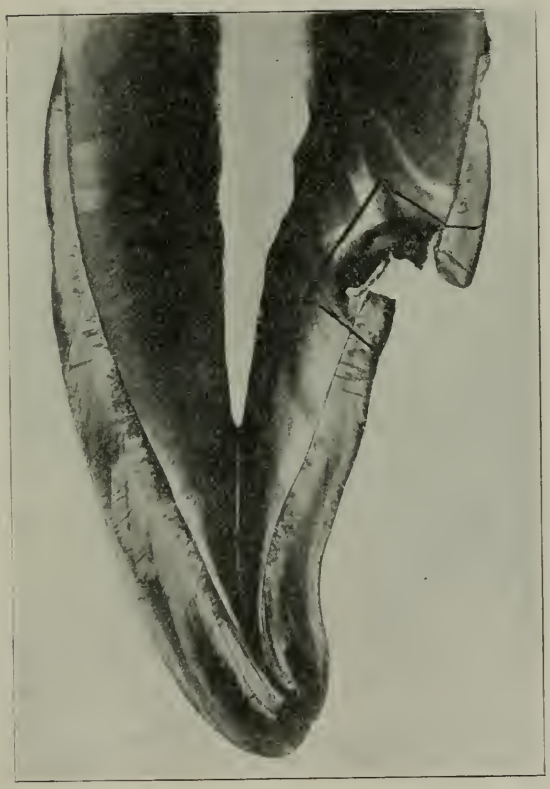


FIG. 28. Labio-lingual section of superior lateral incisor, showing a pit cavity.

Fig. 29. Undermining of the enamel at the gingival border of the cavity shown in Fig. 28.

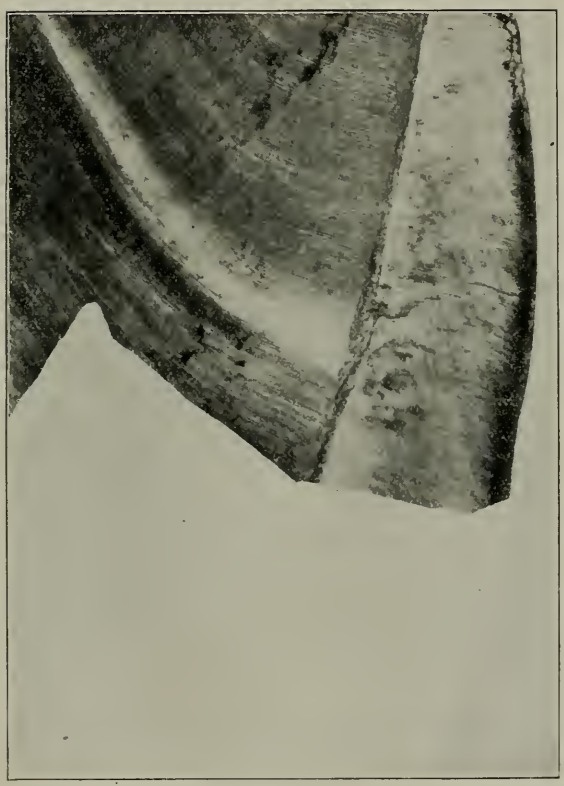


FIG. 30. Preparation of gingival enamel wall shown in Figs. 28-29.

DISCUSSION.

Dr. E. H. Allen: I have listened with a good deal of interest and profit to the paper of Dr. Noyes, and as far as the histological aspects are concerned, I am incompetent to discuss them. However, I do see some practical points running through the paper which have explained to me the reason why I have failures of my own and have seen the failures of others in the cleavage of the enamel, thereby exposing the otherwise solid filling to the danger of subsequent decay, and simply because I cannot understand, and do not know the best methods for preventing these failures. It seems to me the essayist has dealt with this subject in a practical, common sense way.

With reference to the surface angle, it appears to me that we, in our practice, have to bevel the margins of the cavity to a greater or less extent. Perhaps some of us have done so, not knowing why, except it was to cut the outer margin and also to cut away into the edge, and in this way we are in danger of fracturing the tooth during the insertion of the filling. After this demonstration I can see how the enamel rods are protected by such methods.

Dr. G. V. Black: I hardly expected to be called upon to discuss this paper at this time. I hardly know where to begin or where to end if I should undertake to discuss it. It is one of the most important subjects with which we have to deal in filling teeth. In preparing our cavities, if we fail to properly prepare the enamel margins and the cavo-surface angle in the different portions, we will make a failure of our fillings almost necessarily; hence the necessity, if we are to operate well, of studying the enamel carefully, not simply histologically, but the physical characters of this substance as it comes to us, as we feel it and work it under the chisel and under the excavator at the chair. We need to study it histologically sufficiently to enable us to pursue the study understandingly with the chisel and with the excavator, and it is with these instruments that we make proper studies of this structure in order that we may so cut it, so trim it, and so arrange our margins that the histological elements of these margins may be strong and durable. We should carefully study the lines of strength and of weakness of the enamel. I cannot very well go into that phase of the subject at this time, but you will see from the pictures that have been presented this evening of these fissured grooves that the enamel will have no strength along the

lines of the grooves. We need to study this subject closely and learn what the strength of the enamel margins may be in this and that position. The enamel has only begun to be studied. As a profession we have only just commenced to see the importance of the studies of the enamel histologically and at the chair. You must remember that the principal studies of this tissue relate to the direction of the enamel rods with reference to its cleavage, its lines of weakness and strength, and the arrangement of cavity margins as done at the chair from day to day as we are operating.

Dr. C. N. Johnson: I feel the same as Dr. Black when he said that we are about beginning to realize the importance of the proper preparation of the enamel margins, and it is almost impossible to discuss intelligently a paper of this kind in the short time at my command, for the reason that it covers such a wide range and takes up questions that come to us closely in their practical application. We cannot take the enamel as we find it coming to us in the individual teeth on which we operate and examine it microscopically, for we have not the facilities for doing that. We must learn from practical experience, from repeated observations, as to certain qualities of the enamel and how the enamel feels under the chisel or excavator. Until we do that, we cannot hope to prepare the enamel margins as they should be prepared. We have seen several instances to day where there has been the greatest variation in the direction of the enamel rods; we cannot tell anything about them when we come to a case in the mouth from microscopical examination, but we can detect them if we have a well-trained or educated touch. We can detect instantly under the chisel that there is something wrong in a particular place in that particular enamel. We can detect it by chiseling and by the response which it gives to the attack of the instrument, and it is that particular feature of this paper that I wish to call attention to and to make a plea for close observation of the behavior of enamel under the feel of the chisel or excavator. Until we get an intelligent perception of the tissue in this particular we cannot prepare the enamel margins perfectly. It is impossible to lay down a set of rules and say what degree of bevel shall be given to the enamel in such and such a cavity at a certain point. We must be guided largely by an intelligent perception of the behavior of the enamel under the chisel at the time of operation. The dental profession has not paid as much attention to this point as it ought to. A

great many operators are paying attention to it and are obtaining successful results. Margins so prepared have stood for years under the impact of mastication without the operators knowing much about the histological formation of the enamel. It was a natural perception on their part in operating upon the enamel from day to day, and they knew by the touch of the instrument when they had attained perfection in the preparation of their margins. It gives us a more intelligent perception of the question to have demonstrated to us the reason why the enamel behaves differently in different cases.

I am delighted with this paper. I am glad it has been so ably presented by a young man. It shows the drift of investigation in the profession; it shows that our young men are taking hold of these questions, and I want to say that in a decade from now if the progress of dentistry goes on as it has, we will know by microscopical examinations and demonstrations why we get certain results from practical operations.

With reference to nomenclature, this is an important point. It has been the stumbling block for writers upon this subject for years. It has not been properly systematized yet, and I do not believe we have to-day terms that are altogether satisfactory. I make this plea for those who are thinking upon this subject to consider the nomenclature of these margins, surfaces and angles, with the hope that efforts in this direction will crystallize into something that will give us a nomenclature that will be intelligent, simple, easily comprehended, and utilized.

Dr. George W. Cook: I want to compliment Dr. Noyes on his work from a microscopical point of view. I am not capable of discussing the preparation of enamel margins, but I appreciate the immense amount of work he has done in connection with the preparation of these microscopic slides and the photographic work. Having been interested in this work, I must say that I have been very much educated in regard to cavity preparation after having seen the demonstrations this afternoon. I wish that I could speak to you about the preparation of enamel margins, but I cannot do so. I am glad to have had the opportunity of seeing these beautiful pictures.

Dr. A. W. Harlan: The only point I wish to speak of in this connection, after sitting here and having heard most of the paper (with which I am very much pleased), is this: In the prep-

aration of cavities there is a tendency on the part of a great many operators, since the introduction of machinery, to do the work entirely with machinery. I wish to protest against that, because I think the lines and angles can much better be made by the use of chisels and other hand instruments; they can be made with certain positiveness and directness, and I hope the young members of the profession who are filling teeth will spend a little more time in learning to manipulate with their hands and not try to do everything with disks, burs and other instruments that are used with the engine handpiece. The best work done by Dunning and Maynard, F. Y. Clark, John S. Clark, William H. Morgan, W. W. Allport, George H. Cushing and other operators, whose work I frequently see, and that of the late Dr. E. R. E. Carpenter, was accomplished with hand instruments; that is, the external marginal cavity preparation, and also, before the introduction of machinery, the internal work was done by hand, and I think the sooner the dentists of this country who rely so much on machinery realize that they can better prepare cavities by hand work from the shoulder down to the tips of their fingers, the better will they prepare cavities, and the better will the fillings preserve the teeth.

Dr. J. N. Crouse: The students in our dental colleges, in my opinion, ought not to have dental engines until a few weeks before they graduate. They should learn to prepare cavities by hand, using chisels and sharp excavators, because it is less painful. With these instruments the dentist can feel where he is going, and he can tell the portion of tooth that ought to be cut away much better than he can by using a sharp bur in an electric engine. This is a serious matter; nowadays the average student does not learn to manipulate skillfully with hand instruments; he does not know how to use his fingers, and does not learn how to pack gold properly. I believe the education of the fingers should begin in the dental colleges. There is too much machinery used to-day in filling teeth. The colleges wish to insert too many fillings; they want to get too much done. The consequence is, that the student takes an engine and bur and away he goes; and as students operate on subjects who are supposed to get their work done cheaply, such patients are not allowed to kick if the operation does hurt. I contend that the young men turned out of our dental colleges to-day are not so good operators as the men you see here, in proportion to the number turned out. (Applause.)

Dr. Noyes (closing the discussion): I have but a few words to say in closing the discussion. Such pictures of enamel can only show us what we feel, can only interpret to us what we learn at our chairs and why things feel as they do. We must learn to form our cavity margins by the feeling of the tissue under the cutting instruments. But we must or should have some ideas in regard to the direction of the structural elements in order to feel for them intelligently, to feel for the way they ought to go, and learn to recognize the sensation of the cutting instruments and interpret those sensations by the structural elements so as to intelligently shape the margins as we cut them.

In connection with what has been said with reference to hand instruments, the more closely I have followed the direction of enamel rods, the more easily do I excavate with hand instruments in places where I used to think I could not do it without other instruments. This close consideration of the direction of enamel rods has increased my facility of operating more than any other one thing in the time I have been in practice.

MODERN MANIPULATIVE METHODS IN CROWN AND BRIDGE WORK.

By H. J. Goslee, D. D. S., Chicago, Ill.

While the application of crown and bridge work is more or less modern, and has since its inception kept well in line with all collateral pursuits in the advancement of the dental prosthetist of to-day, yet, with all the merited recognition and progress, distinction and advancement, there is yet much room for improvement, many opportunities for a broader general observation, which would result in a more intelligent and judicious application of principles, combined with a more careful consideration of manipulative details.

The success of any work, or the application of any general principles, depends largely upon an intelligent comprehension of the technique of detail underlying same. Granting, mayhap, that our mediæval ancestors delved into the mysteries of crown and bridge work to some extent, it is, nevertheless, within the happy province of the present generation of dentists to mark its real advent, and recognize the notably rapid strides of advancement toward perfection which are the result of a natural progression amid the potent influences of modern environments.

In the face of this acknowledged advancement, and in view of the superabundance of literary productions in the past few years upon kindred subjects, can my audacity be doubted in acquiescing in the invitation of your committee to present something to this body on the subject?

Indeed, *enthusiasm* is about the only excuse I have to offer for the fact of my bending to those persuasive influences, for I am sure that you will not deprecate my sincerity when I say that it requires more than a pensive indulgence now to present to any body of reading, scientific men, anything new, original or startling, or even that which will be received with more than a passive concern, of a *practical* nature.

Such is not the purpose of this paper, yet permit me to say that since the advent of crown and bridge work—that which was

so soon destined to occupy a place of such prominence in our ranks—that which was to merge or weld together in strong bonds of union the two respective departments of practical dentistry, but little progress has seemingly been made by a great many along the lines previously mentioned.

This may appeal to some as being a somewhat rash assertion, and yet we have said that there is still room for improvement, and most of us, I believe, will acknowledge that we have failures.

To consider the cause of these failures it is necessary that we resort to comparison and criticism. To overcome them it is necessary that we rely not so much upon our own intuitive genius, or to what some one else may tell us, but more to thought and study of cause and remedy.

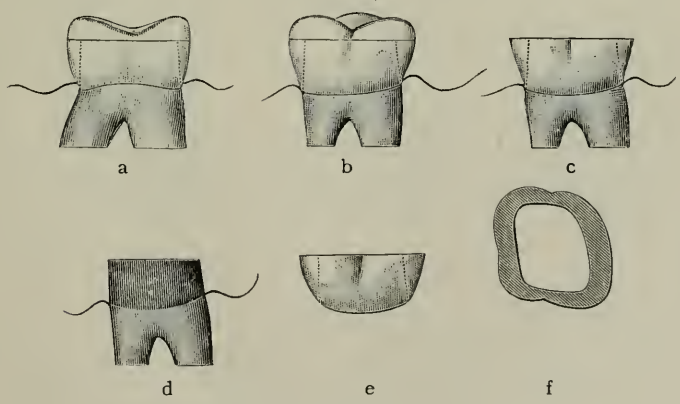
Take, for instance, first of all, the preparation of roots for crowns. How many cases do we see where crowns are worn bearing all the earmarks of faulty root preparation? Is this due to a lack of knowledge of the requirements, or to the manipulative procedure? Neither, I think, but mostly to simple indifference or negligence. It is not an exaggeration to say that at least seven out of every ten roots supporting crowns with bands show every symptom of gingival inflammation or peridental irritation; yet the advantages of a band, which are to add stability to the crown, to prevent a possible fracture of the root under the stress imposed, the immunity from decay, and the washing away of the cement by so hermetically sealing as to exclude secretions, are undisputed and prominent factors to permanent success.

The common cause of this condition may sometimes be due to the electro-chemical theory (?), but, to my mind, can invariably be attributed to the *mechanical* theory, or the irritating influence of a poorly fitting band, due to imperfect root preparation. What a multitude of sins these gingival borders of the gums do sometimes cover. I should like to see a skiagraph of the relation of many of my own crowns to the roots supporting them. For this reason I have long advocated and believed that it is seldom possible to subject an ordinary tooth with a vital pulp to the proper preparation without first devitalizing, and have contended that in denuding the enamel and encasing the tooth inside of a metal covering, with an intervening layer of cement, an unnatural condition was established, so far as external influences upon nerve and blood supply were concerned; and that the irritating influence

of oxyphosphate of zinc to the denuded surface, or the possible presence of metallic arsenic in the cements were also destructive to the ultimate vitality. Be that as it may, it is almost impossible to properly shape a tooth containing a vital pulp for the reception of an accurately fitting band, as I shall herewith illustrate with models specially prepared. You will see that if a tooth contains a normal pulp and is of normal formation, how difficult it will be to so render its occlusal dimensions that they may at no point exceed those at the cervix, which constitutes the necessary preparation. (Fig. 1.)

Moreover, we are told, and, indeed, clinical experience teaches us, that the function of the pulp is at an end—so far as usefulness is concerned—when development is reached, which is borne out in nature by the gradual atrophy of this tissue in old age, yet the tooth remains, assuming its normal duties and apparent functional activity. While some abuse could be given this theory in cases of constricted crown formation, very young or very old patients,

Fig. 1.



Key to Fig. 1.

a Showing approximal view of typical lower molar. b Buccal view. c Buccal view with occlusal surface sacrificed. d Showing necessary diminution of crown dimensions. e Showing amount of tooth structure removed, buccal view. f Showing thickness of tooth structure sacrificed at occlusal edge.

etc., yet if the same so facilitates the root preparation as to render possible a good, close fitting band, we are warranted in so doing, irrespective of the probable death from the other influences men-

tioned, and I feel frank to say fewer failures by far and more comfort to our patients would result.

Root preparation. Since we lay so much stress on the importance of root preparation, which forms the foundation of our work, it can perhaps be best and most intelligently considered by subdividing it into requirements and classification.

Requirements. The requirements can be divided into three general essentials, namely: 1. Treatment and filling of canals. 2. Restoration of broken down walls. 3. Diminution of crown dimensions.

The treatment and filling of the canals should always precede the root preparation because of the necessity for the application of the rubber dam, without which the success of the operation is materially affected.

The restoration of badly decayed or broken down walls is next necessary, in order that the continuity of the root may be restored to facilitate the fitting of the band and prevent the possible fracture of the root in preparing it by supporting the remaining walls, and the probability of subsequent decay by leaving a pocket. The diminution of the crown dimensions simply means a paralleling of the walls sufficient to admit of a close fit at the constricted portion about the gingival border of gum.

Classification. Following upon the requirements comes a classification of the various phases of root preparation, which is divided into three general classes: 1. Preparation of root for shell or telescope crown. 2. Preparation of root for porcelain face crown with band. 3. Preparation of root for porcelain face crown without band.

Under the first class we find probably the most difficult operations because of the advantage and desire for leaving the crown as long as the occlusion will permit, which, of course, leaves the enamel more intact, dense, and difficult to remove. It is right here that considerable attention should be devoted to the restoration of broken down walls when extending to or below the gum line, and this can probably be best accomplished by first carefully preparing retention and margins, then fitting a thin band matrix around the root so shaped as to make the artificial restoration parallel, to save further preparation there, then by varnishing or oiling the interior of the matrix amalgam can be used to good advantage in reproducing the continuity, and the matrix allowed to remain in position

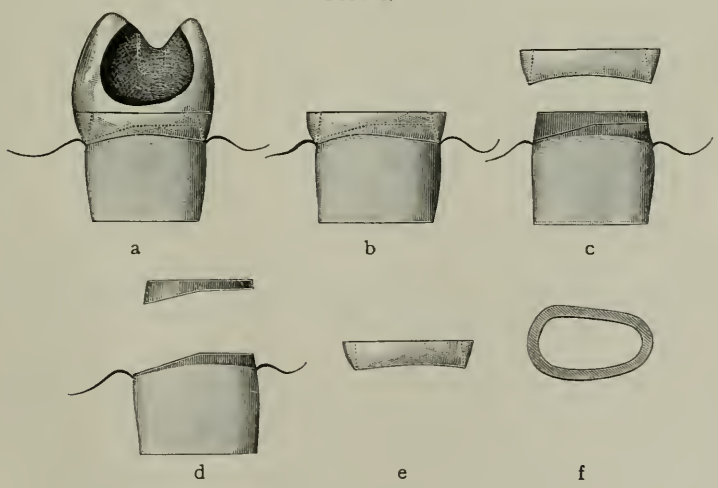
until amalgam hardens, when it can be easily removed because the oil or varnish prevents amalgamation with it.

After the matrix has been removed, the buccal and lingual walls can be easily reduced to a parallel line with a thin edge carborundum stone, which when revolving against the root should be carried upward and downward upon the surface so as to prevent the formation of a shoulder at the gum line. The approximal surfaces can then best be favorably prepared by using a very small fissure bur inserted into interproximal space at right angles with the root, and brought occlusally with some little force against the surface of root.

When a root stands alone the carborundum stone will answer for the distal surface, but the bur is better adapted to the mesial, if properly used.

The second class of roots—those for porcelain face crowns with a band, for either gold or porcelain work—are quite as easy of preparation if precautions are observed, and refer mostly to the

Fig. 2.



Key to Fig. 2.

a Showing typical upper bicuspid. b After crown has been sacrificed at the proper line. c Showing necessary preparation of remaining portion of the root. d Showing further preparation after band has been fitted. e Approximal views of thickness of enamel remaining after crown has been excised. f Occlusal view of this remaining enamel edge.

ten anterior teeth. After canal has been filled the remaining portion of the crown should be excised evenly on a line so as to leave the root about one-sixteenth of an inch longer than the gum. If the excising forceps are used, avoid a possible fracture rootwise by first cutting through the enamel at the desired point with thin edge stone on both labial and lingual side. The enamel can be then quite easily removed with the cleavers and the approximal surfaces made smooth and free of obstruction by passing the small fissure bur through the interproximal spaces. The root is purposely left at least one-sixteenth inch long until the peripheral preparation is completed, which very materially facilitates not only the removal of enamel, but the securing of an accurate measurement, and particularly the fitting of the band, *because the root here remains to shape and guide the band* as it is pressed into place. The band should be trimmed so as to pass just beneath the gum and a uniform distance at all points. Make sure that it fits closely to the root and does not encroach upon the peridental membrane. Then remove and trim away so that when readjusted it is buried on the labial or buccal surfaces and visible only about half a line on the lingual. Then, and not until then, the root is ground down even with the band. If these precautions are observed, the brutal and barbarous practice of driving or hammering bands into place is entirely unnecessary, as they can be easily carried into position by slight pressure with a small piece of wood (preferably), and should fit tighter as they pass rootwise. (Fig. 2.)

The third class of roots are those for crowns without bands. Here, of course, the removal of the enamel or peripheral preparation is unnecessary, but whatever should be the surface of the face of such a root, whether it be flat, beveled, or concaved by process of decay, the floor or base for the crown should fit it accurately. If this cannot be accomplished by burnishing the material used for same into close adaptation, gutta-percha impressions should be taken, from which fusible alloy dies can be made and the adaptation secured by swaging. A crown without a band is often indicated in very young and very old patients, in extensively decayed roots, in very crowded arches, and in roots loosened by disease of surrounding tissues, and can be made with bright prospects of permanence if closely adapted, so as to prevent the penetration of secretions between the joint and the subsequent disintegration of tooth structure.

Having said that the mission or purport of this paper was to compare and criticise, let us pass from the consideration of root preparation to a few of the various common practices which have more or less to do with the principles, practicability and success of this work, in a general way.

Open face crowns. Undoubtedly one of the greatest sources of failures, one of the most frequent at least, is the application and construction of these so-called slipper, skeleton or open face crowns, to serve the purpose of a pier or an abutment or anchorage for bridges. So much has been said of these infamous affairs that it seems neither necessary nor consistent to employ even the time to condemn them, yet many will persist in using them.

The question of sacrificing a normal or slightly decayed tooth crown for the purpose of replacing it by artificial means as an anchorage for bridges, is truly a most important one, and well worthy of mature thought, deliberation and study; and yet since it is now within the province of the skillful operator to destroy that crown, and so replace it as to make it serve the purpose both practically and artistically, every purpose for which it was intended, with even perhaps an occasional improvement upon nature, I think that where the lost or missing teeth are of sufficient importance to warrant the insertion of a permanent stationary bridge we are almost invariably justified in sacrificing such a crown. If skillfully done, we are assured of at least a fair degree of success and permanence in our operation.

I will venture to say that more beautiful, natural crowns of teeth have been sacrificed by the poor fitting and injudicious application of these same open faced crowns than have purposely been destroyed to be replaced by a well and properly made artificial substitute.

When they are used the crown of the tooth carrying them is only *saved to be lost* subsequently, because of their ill adaptation, for to perfectly adapt them means usually to so distort the natural crown that its appearance will never again be as even nature intended it.

If such a crown is ever applicable, it is only on such teeth as those whose naturally constructed crowns make them favorable subjects, such, for instance, as may be found in the lower anterior teeth ; but they are at best but *bands, and band bridge work is not a*

success, and to it alone can be attributed a marvelous per cent of the failures which have occurred in bridge work.

Backing porcelain facings. Among other one-time difficulties which have been a source of great trouble with many and which has but lately been reduced to a minimum, or overcome entirely, is the backing of porcelain facings, so that they may be properly supported and sufficiently protected to withstand the ravages of the force of mastication.

For a considerable time apparently no effort was made to accomplish anything but the simple retention of the facings in their proper relation, with the result that the breaking away from their attachment was by no means an infrequent occurrence.

While the pins are the sole retaining influence, precautions must be observed to prevent their acting as a fulcrum against applied force to the exposed incisal edges. This can be easily accomplished by so protecting that edge with a rigid, nonyielding covering as to relieve the porcelain from the possibility of strain.

The backing, then, is a matter of no small consequence. It should first be perfectly and closely adapted to the surface of the porcelain, and then sufficiently reinforced from the pins to the occlusal edge to withstand force without changing its shape when devoid of even the presence of the facing in position to sustain it.

The method I now give preference to is to first bevel the cutting edge half way to the pins, until you have produced a smooth sharp edge, then burnish closely 34 ga. pure gold to the surface of facing, allowing a slight surplus around edges; over this adapt 29 or 30 ga. plate gold, 22 k., from and around the pins to the incisal edge, with small surplus there; then remove and unite these with 20 k. solder. The double backing over parts subjected to stress together with the intervening solder gives a closely adapted yet stiff and rigid backing, which is now placed upon facing, attached securely and finished down along the edges. In finishing the incisal edge the file should be passed on a parallel line with the face of porcelain which, instead of feathering the backing down thin here, leaves it the full thickness. It can then be rounded off so as to be practically invisible and yet longer than the edge of porcelain. Care should be exercised to avoid overhanging edges, which invariably result in fractures due to impingement upon the contraction of the solder. The finishing of the backing should be *completed* before soldering to avoid this possibility, as no change will take place in

its form during the process of soldering, which might occur if this reinforcement was made of solder alone. With this care in manipulative procedure the inevitable result is apparent, irrespective of whether the facings possess the longitudinal or crosswise pins. The latter, however, are the strongest when they can be adapted without too much grinding.

Soldering facings without investing. This is a very useful and time-saving procedure oftentimes in cases where the facing may be retained in its proper relation without an investment, and can be accomplished without danger of fracture if the porcelain is placed upon a charcoal block or asbestos pad before applying heat. This so modifies the volume of heat at first that it is no more readily absorbed by the pins than by the porcelain, which enables both substances to expand together. Where the facing is placed directly into the heat from a Bunsen burner, however, the danger is increased, because the metal pins are a better conductor and absorb and expand under the influence much quicker than the porcelain.

Assembling anterior facings. This portion of bridge construction is quite often done in more or less of a slipshod manner, and, in consequence, a source of dissatisfaction to both patient and operator.

Take, for illustration, the assembling or soldering of a bridge, including the centrals and laterals, and note how often we will see the respective backings united the entire length of their approximal contact, and yet their union one of weakness and likely to give away under slight stress.

If one is careful and at all painstaking this need not be, for after adjusting them properly in position and carefully retaining their relation while being removed from models, then placing a piece of *mica* between their occlusal edges extending up to the pins and projecting labially and lingually about one-sixteenth of an inch they should be invested.

When ready to be soldered a piece of 18 ga., 18 k. round gold wire should be accurately fitted and placed across the backings at a point just beneath the mica, then in soldering permit the solder to flow freely over and around this wire, and the assemblage is accomplished with the greatest of strength and the most artistic effect, together with the fact that upon the displacement of the mica the interspaces remain open, which gives æsthetic appear-

ance to the work, comfort by assuming a more natural form lingually, and offers no impediment to speech.

Indications for the use of porcelain. While it is not the purpose of this paper to indulge in a discussion of the advantages and disadvantages of porcelain as applied to crown and bridge work (for the specific reason that this society at its last meeting had the pleasure of listening to the best essay yet written upon the subject, to my mind), yet it is of too much importance to pass without reference.

That porcelain work is the ideal of modern prosthetic dental art there is no question, but that it will *never* supersede gold work in the construction of crowns and bridges there is also no doubt, for the reason that it is not generally applicable to all kinds and classes of cases. The conservative indications for its use are somewhat restricted, and in consequence of too much enthusiasm are more or less abused.

Porcelain possesses all the required strength only when enough of it can be used to insure strength, and then it must be supported by a strong and rigid metal framework.

The injudicious application of this work in cases of short, close bites for crowns, and where there is not a considerable alveolar absorption for bridges, and also where missing teeth throw more than the ordinary work upon the remaining ones supporting bridge work, is the cause of many failures where the material is condemned. The application of this work is not necessarily confined, however, to constructing all porcelain crowns and bridges, for with slight effort very artistic results can be obtained in other lines.

Gum restoration on plain teeth. Gum restoration often becomes necessary in the construction of bridges where our better judgment suggests the use of gold, or even in partial dentures, for no matter of what material the work is to be constructed, no matter how much absorption may have taken place where teeth are missing, there is a prominent factor to be considered, and that is the teeth must be as nearly as possible all of the same length from gum line to incisal or occlusal edge, and that their proper alignment must be preserved. In cases where we find this excessive absorption select an ordinary tooth and bake a neck of gum enamel on it sufficient to reach the natural gum. Very little grinding will then enable you to fit it nicely to place, when if for

a gold bridge or a metal plate it can be then backed in the usual manner, or if for a rubber plate, placed in position, and proceed as usual, and you have a tooth restoring lost tissue, preserving the alignment, easier to fit, and which looks far better than could have been accomplished by using the ordinary gum section tooth.

Seamless crowns. Much is heard and said of late regarding the pecuniary advantages and methods of construction of seamless crowns for bicuspids and molars, and considerable time, effort and energy is being expended to perfect the methods and systems of accomplishing same by means of sectional dies and swaging with hydraulic pressure, etc., yet a careful consideration of possible advantages, as compared to the sectional crown, causes me to affirm that it can have no practical value or apparent advantage, regardless of how accurately it may be produced, over a well made, ordinarily constructed crown; because if the occlusal edge of band is properly shaped and contoured and the cusps closely and perfectly fitted, and carefully approximated before soldering, and a high carat solder used in uniting them, the result is as nearly a seamless crown so far as the joint is concerned, as is ever indicated, or could be desired by the most fastidious; and an appreciable amount of time and apparatus has been saved which is otherwise spent to no practical purpose.

Crown requirements. While the detail of procedure in crown construction is more or less familiar to all, yet it is readily apparent that many persist in ignoring these essentials upon which ultimate success in the true and full meaning depends, to a grossly indifferent extent. Those essentials are *fit, occlusion, contour and appearance.*

Every one grants that a crown must fit, and that it should be so contoured as to restore the points of contact with approximating teeth, and that it should possess that æsthetic appearance which will enable it to obtain or preserve the proper symmetrical alignment and characteristics of the corresponding or adjacent teeth; and yet the one essential which enables the crown to restore to the root its former degree of usefulness—occlusion—is neglected, abused and forgotten to a great extent.

A consideration of the importance of this little thing of occlusion in bicuspid and molar crowns must bring to our minds the fact that generally speaking no progress of great extent has been made in the manipulative detail of obtaining same in the construc-

tion of this work in gold. This may sound like a rash assertion, yet it is based upon facts, for the evolution of the ordinary methods of procuring occlusal surfaces for gold crowns and porcelain face dummies has been practically from the imprint of the cusp of a natural tooth in cuttlefish bone or other substances—to the old copper or zinc individual dies of typical cusps, numbering four or five to the set; then to the copper or steel die-plate with first twelve, then sixteen, and then thirty-two molds, evenly divided between the upper and lower; and then to the so-called *systems* with from perhaps forty to one or two hundred cusps to select from; yet during all of these improvements and modifications the same general principle has been zealously maintained—that of stereotyped forms, or, if you please, ready-made cusps.

The fallacy of this principle is apparent. The idea of expecting a ready-made cusp form to first evenly approximate the edge of a well shaped and properly contoured band, and then accurately occlude with the opposing tooth or teeth in even a majority of the most typical and normally posed cases, is certainly beyond comprehension and reason.

Realizing the importance of this phase of the question, I think that it is just as necessary to make a special cusp or die for the case at hand as it is to first make a band to fit the root; and have in consequence for some time maintained that there is little place or use for any of these stereotyped dies or systems, with those who may be disposed to secure both positive and accurate results in their work.

The method that I now use and teach, and take occasion to outline to you, is not new only so far as its modifications are concerned. It is rather only a development of the old method of Dr. Norman Kingsley (Evans. pp. 83, CVI.) of making a cusp for the case from an imprint, or outline, of the occluding surfaces of the opposing teeth, being so modified in detail as to be simple and expeditious, accurate and artistic, and equally as applicable to dummies for bridge work as to single crown. A brief description follows :

In fitting the band it should be cut so that the cervical edge when soldered is the exact size of the root measurement, while the circumference of the occlusal edge may vary according to the difference between the size of the root and its relation to the dimensions of the space to be filled. The cervical edge should be so

shaped as to pass a *uniform* distance beneath the border of the gum. This distance should be but slight, only pressing it rootwise sufficiently far beneath the gum to prevent the lodgment of accumulations.

The occlusal edge should then be cut the proper length with reference to allowance for depth of cusp, filed smooth, and so shaped as to fill the space, restore contact points, and preserve a symmetrical alignment.

When this adaptation is completed, fill the band, when in position, with wax and proceed to take the articulating bite and impression in plaster, which is the only reliable material, and which can be taken together by using an original but simple cup for the purpose, which will carry the plaster, if mixed of a fairly thick consistency, into place and permit the closing of the teeth into proper occlusion at the same time.

After securing same prepare for separating and fill each side separately mounting upon the articulator at the same time. When the models are separated, the wax inside of band is removed and the screw is adjusted so as to bring the teeth in close articulation. Then varnish the surfaces of models in close proximity with band with collodion.

Thinly mixed plaster is then placed inside of band and the articulator closed, which firmly imprints in the plaster in band the occluding surfaces of the opposing teeth. (Model 1.)

When the articulator is opened and the surplus plaster trimmed away even with the band, the remaining contents form a somewhat crude cusp, but one that presents perfect outlines of the opposing teeth. (Model 2.) We do not stop now, but proceed to apply our artistic skill by individualizing and typifying the cusps so that they may resemble the natural tooth, and which is easily accomplished by simply carving the typical grooves and sulci, which in no way need destroy or interfere with those places marking the desired points of a perfect occlusion. (Model 3.)

Modeling compound could be used, but is not so easy to carve, because of the tendency to flake away, and the susceptibility for changing form under pressure.

A study from natural teeth of cusp form and outline will enable any one to acquire with more or less dexterity, the skill to produce very artistic results with comparative ease.

The band and its contents should then be removed from model,

with a precaution to preserve the relation, when we are ready to proceed with the dies. If a solid or cast cusp is desired, a ferrule or ring of brass of large enough dimensions should be filled with moldine into which the plaster cusp is imprinted to the depth of the edge of band, the mould then placed over the Bunsen until dry and hard, when the gold scrap can be fused into it and cast by using a piece of steel or carbon large enough to cover the area of the cusp. Cast cusps, however, are not recommended because to swage them gives a better reproduction of the carving, more perfect outlines, and they are more easily fitted and adapted to the band, and can be made of any desired thickness by filling with solder.

For a swage cusp the plaster forming same should be trimmed down along the peripheral border just enough to expose the edge of the band. This is materially important as it allows for the thickness of gold used for cusp, and so renders *possible* a perfect approximation of the edge of cusp to band, which could not be procured without such an allowance. The metal ring is then filled flush to its edges with moldine, into which the plaster cusp is firmly imprinted just far enough to outline the exposed edge of band. A funnel-shaped cap of metal or hard or soft rubber having a flat base of equal diameter with the metal ring, and a small perforation through the center is then placed over the mold and the button or cusp cast of pure *Watts* metal by pouring the same into this cap. After the metal cusp cools sufficiently, it is easily separated from its attachment through the small perforation to remaining portion of metal, and is a perfect reproduction of the plaster contents of the band.

This cusp button is then placed upon the opposite side of the ring containing moldine and carbonized nicely, which can be most easily accomplished by igniting a small piece of gum camphor which deposits a beautiful layer of carbon without generating any perceptible degree of heat. The rubber ring is then adjusted, and the counterdie run of *Mellotte's* metal, or fusible alloy.

The gold forming the cusp is now swaged into the counterdie with lead in the shape of a small ingot or bullet, and after being conformed to the proper shape the surplus is removed, and then the button is used to bring out the finer lines.

The *Watts* metal is used to form the cusp button for two special reasons: First, it is harder and higher in fusing point,

which precludes the probability of uniting the two by pouring one upon the other; and, second, because it is impossible to swage or conform to a desired shape a piece of gold or other soft metal between two like surfaces of even resistance without stretching very materially. Something must give in this procedure, and unless one of the dies is softer and more yielding than the other, the gold will suffer and be much altered in thickness by the time it has been properly swaged, and it is most noticeable around the edges. After the gold cusp has been formed the band is then placed in position upon articulator after the removal of the plaster cusp, and the gold cusp trimmed down with a file until it perfectly approximates the edge of band and admits of the closure of articulator into occlusion, then wired together and soldered, without too much deference to economy. The result is a perfect occlusion, with an almost imperceptible seam of union between band and cusp, and yet accomplished in about the same space of time ordinarily consumed in selecting one of our numerous ready-made cusps, and fitting it to the band and occlusion with only a faint hope of success and accuracy.

These same general principles are applicable to the construction of porcelain face dummies for bridge work, and it is needless to say in conjunction that these should occlude just as accurately as the crowns, if our desire is to reproduce or improve upon the natural condition of beauty and usefulness. In bridge cases the abutments should always be completed first, and also should each individual part be finished before they are finally assembled or united. Such so modifies and facilitates this operation as to render it simple. After completing the abutments they are placed in position upon the roots, and the articulating bite and impression taken in plaster as described. When this is filled, separated and placed upon the articulator the facings are selected, ground to fit and backed with a single backing of 34 gauge pure gold, because the cusp here will form the reinforcement. The occlusal edge of the facings should be beveled, as mentioned before, and the cervical edge should, after being ground to fit the gum accurately, be so rounded and smoothed as to prevent the occurrence of hypertrophy of the gum, which will result if this edge is left at all rough or sharp. The backing should only extend as far cervically as to take in the pins nicely, and should never project far enough to pass between gum and facing when in position. A small surplus of

backing should extend beyond buccal surface of facing and at right angles with it, so that the edge of cusp may be placed against it to protect the occlusal edge. The facings are then placed in position on model and retained from the outer surface so that their backings may be exposed. At least one of the pins should be left to hold the plaster which is now poured against the backings and into which the occluding teeth are imprinted. Use ordinary means to prevent the plaster from adhering to any surface but that of the facing. After hardening, this plaster cusp is trimmed and carved as before described. Then follows the making of the cusp button, counterdie, and swaging of cusp. In fitting the cusp to the facing, avoid the showing of too much metal along the occlusal edge, overhanging edges and too close proximity. After fitting nicely, invest and solder each dummy separately, and in so doing so fill in or render convex the lingual surface that it may be self-cleansing when in the mouth, as too much attention cannot be given this important phase of bridge construction. No matter how extensive the assemblage is then easy, the detail simple, and the result accurate. What more do we want?

The ideal and modern bridge work is that which fits and occludes, which is self-cleansing and built strong, and which is supported by good stable roots, no one of which will have to do more than the work of two, no matter what the sacrifice.

DISCUSSION.

Dr. R. N. LAURENCE: *Ladies and Gentlemen of the Illinois State Dental Society:* After listening to a paper fit to grace the pages of a text book, we, the older members of the profession, realize fully the wonderful progress that has been made in this line of work. To my mind, no better methods, or greater advancement than that set forth by the writer has been presented in the direction of an artificial substitute for replacing the natural organs. It is beyond contradiction that a properly constructed crown or bridge is the nearest approach to the natural organs of any substitute.

During the past few years I have had the opportunity of examining and inspecting many cases of both honest and dishonest work, and it has led me to be cautious and conservative in my efforts in this line. So many dentists will attempt the impossible cases regardless of conditions. The number of failures that have come to my notice from the hands of the advertising dental parlor

man, or the student fresh from some so called dental college, announcing himself to be an expert in this line, are sufficient to make a conscientious practitioner sick. I would bring to your notice three cases that have come under my observation which will illustrate in some degree the causes of failures set forth in the paper. Number 1 was an extensive upper bridge, anchored upon the wisdom teeth and the cuspids by shell crowns; the cuspids were open-face crowns, as referred to by the essayist, and adapted without much grinding. This case came to my notice with an ulcerated left cuspid, decay having set in under the margin of the gum, had perfectly cut the crown from the root, and the piece was moving up and down, suspended from the right cuspid to the wisdom tooth on the left. Number 2, similar to Number 1, came to me to have the facings on the centrals replaced, stating, that within two years these facings had been replaced nine times. Number 3, which I pass around for your inspection, is a small bridge, which illustrates the sledge hammer method in driving the crown and pins into position. This case presented to me with a fistulous opening, causing much distress on part of the patient. I removed the piece, and we found the pins in position as you will see by moving the upper portion.

In conclusion, permit me to pay my respects to a few of the real artists in the construction and adaptation of crowns and bridges, both gold and porcelain, whose work I have had the pleasure of inspecting, as well as the beautiful pieces of work made by or under the direction of the essayist. I would refer here to the excellent work of Professor Schwartz, Dr. Taggart, Dr. Good, and others, whose work is perfect in every detail. Such men are an honor to our profession, and success will crown the future of students who, under the guidance of such teachers, complete a course of instruction in one of our *real* dental schools.

Dr. E. J. Perry: I wish to congratulate the society upon having heard this interesting paper. I have no fault to find with it. I am not going to discuss it in the strict sense of the word. I have read it and I understand it. The paper is its own best argument. It finishes up the subject very comprehensively. Everybody knows about the good work of Dr. Goslee; every one knows that he finishes a thing all right. Every one does not appreciate, however, the immense amount of work that he has performed in these models and the samples that he has passed around. I want

to take slight exception to one or two little things—I do not like to commend him too much—and I refer now to seamless crowns. I have always contended that a crown should possess at least three things; that is, it should fit the root at the proper place, namely, just under the margin of the gum. It should occlude with the opposing teeth, and it should fill the interproximate space somewhat at least, as the natural tooth should, and I do not care if that crown is made with platinum, silver, lead or aluminum. If it possesses all three of those qualities, then it is a cracker-jack of a crown. Now, if we have it made of twenty-two karat gold, all right. There is no objection to that. It goes without saying that I would use gold. If we could arrive at this point by a shorter circuit than has been described, then that is the best way to do it. The doctor says that much valuable time is lost in the various steps which are observed in the manufacture of seamless crowns, and then he describes with great particularity a method of producing these buttons, carving up the cusps, etc. I think that is a most circuitous way of getting at the point. Dr. Hebert, of this city, has made an improvement upon the seamless crown within the last few months, which has come to my notice, and has appealed to me as being a very good method, so much so that I have been making my crowns in that manner. I thought there was a clinic to be given by Dr. Hebert and his layout was to be exhibited. But I will not speak of that. All of the advantages that were emphasized by Dr. Goslee are secured by this method. The method is less circuitous.

I want to say a word or two on the restoration of broken roots. If I understood the doctor's paper rightly, he restores the ragged ends of broken down roots with amalgam. I have done that a great many times, and I have quit doing it, for the reason that I do not think I have got satisfactory results. The amalgam in after years seems to oxidize the gold, and there seems to be going on in there something—I do not know what it is.

As regards cutting broken down teeth, I do not cut them off with the excising forceps very much, because it seems to me much easier to cut them down with burs, that is, bur out the dentine and break off the frail enamel walls, and then stone down with carborundum stones. I have reference to those cases where the entire crown is excised with the excising forceps.

Dr. Laurence has sent around for inspection a vile affair

which he has condemned, and which I condemn also. I just want to say that this does not rise to the dignity of a bridge. A tooth that swings into another tooth is not a bridge, but more of a gate than a bridge, and I want to go on record as being bitterly opposed to the general and mechanical principles of hanging one tooth to another with any expectation that the dummy will do business any length of time. (Laughter.)

As to the devitalizing teeth for the purpose of putting on bridges. Here is an argument right here (pointing to models). I had a number of other points that I intended to speak of, but I am reminded that we have already done a good deal this afternoon, and I will not further inflict myself upon you.

Dr. J. E. Nyman: In all sincerity, I must say that this is one of the best papers I have ever heard in this department. There is no question about it. We may find fault with it here and there in detail, but to find fault with it in general is utterly impossible; and while he has spoken very nicely of the paper which I had the privilege of reading before this society last year, please believe me, we do not constitute a mutual admiration society.

We hear, and always have heard, a great deal of condemnation of the practice of bridge work. It is not the principle of practice of bridge work that should be condemned, but it is the poor judgment and worse execution of most men who attempt to practice it.

With reference to inflammation around the gingival border of the gum, we know that these pathological conditions arise almost altogether from the carelessness on the part of the practitioner. I have noticed that these careless practitioners are always prone to ascribe the results of their carelessness to some agency entirely beyond their control, hence has arisen the ridiculous theory that it is due to some electro-chemical action between the gold or platinum, as the case may be, and the gum tissue. The prime cause of trouble in these cases is the faulty preparation of roots and the ill fitting bands which result as a consequence. A second factor which causes inflammation is the manner in which the roots are trimmed down. If sandpaper disks, carborundum disks and the like are used to trim the roots below the gingival border of the gum, they cause a laceration which, while it may heal, the tissues seldom regain their normal condition. Moreover, there is extreme likelihood that the grit from these disks will imbed itself in the tissues, and unless it is carefully washed out with a hypoder-

mic syringe, the needle of which is inserted under the gum margin, there will be an area of inflammation within a short time.

With regard to the question of devitalizing teeth prior to crowning them, I think one can safely say that, with the exception of some rare misshapen forms of teeth, it is utterly impossible to properly prepare a tooth for a crown if it has a living pulp in it, for the simple reason that no patient would tolerate the excruciating pain which would ensue. And even granting that the patient did submit to it, we may be almost certain that the nerve in that tooth will never recover from the shock it has received—will die, and the operator will find himself with an abscessed tooth and an angry patient to deal with. In dealing with broken down roots, it is quite essential to restore the lost portion in order that the band may be easily and properly fitted. I prefer to do this with some of the adhesive cements instead of with amalgam, for if amalgam is used we must cut away still more of the root to secure retention, and make an already weak foundation still weaker. Then, too, I always endeavor to fit my bands up beyond the margin of these restoring fillings, and I can only be sure that I have done it by removing the material that I used to restore them with, after the band is in place.

The doctor referred to trimming the mesial surfaces of roots. I think that is about the hardest surface of all to properly trim down. He spoke of trimming it with a fissure bur. I have never used that method, but have usually accomplished this result by injecting the gum septum in the interproximate space with cocaine, and then deliberately cutting off a section of the mesial surface of the root with a large diamond disk, carrying it well down below the margin of the gum. This, of course, injures the gum to some extent, but it is painless because of the cocaine injection, and heals readily because it is a clean cut. Thus I am enabled to trim this difficult portion of the root quickly and accurately. I keep an assortment of diamond disks of various sizes and shapes for this work of trimming roots, and I prefer them to carborundum disks of any description, because these latter are so prone to break. Something catches and twists, and the next thing you know, you have a small sized circular saw, so to speak, tearing the patient's gum.

I am glad the doctor condemned open face crowns as he did. To my mind there is no earthly excuse for putting them on except

when we wish to make a temporary bridge, and those cases are few and far between. They are a failure from both an artistic and mechanical point of view. It is quite true that the teeth on which they are placed are only saved to be lost.

I have never found it necessary to make double backings for facings in order to reënforce them. I have preferred to use one thick backing, than to adjust two thinner ones, using pure gold of 26 gauge, B. and S.

I am glad he spoke against seamless crowns, because I believe we can make a crown by the customary method much quicker and easier; and with more certainty of success in the long run than we can with the seamless crown method. The dies obtained by pouring Mellotte's metal into plaster or modeling compound impressions are not the idea of accuracy; that is, those that I have tried have not been, and I have tried both long and hard. Then, too, Mellotte's metal is not the unyielding material that many operators would have us believe. Of all the seamless crowns that I have ever seen made, even after they were completed, they required nearly as much fitting to the root as the first trial band did. I wish that he had forcibly condemned the practice of putting on ready-made crowns. When I hear a man say that he does so, and that he finds they are all right, I generally make up my mind that he is one of those men who is still putting in cotton root canal fillings, and who does not care whether root canals are filled with saliva or not, while he is treating them; who fills the larger part of a cavity with amalgam and slaps a thin veneer of gold on top of that, and charges his patient for a gold filling.

I differ with the doctor in regard to the material best adapted for carving the cusps. I prefer modeling compound to plaster. It can be handled and carved with much less crumbling.

I wish the doctor had referred to the necessity of making solid cusps. The best of us occasionally find ourselves compelled to grind off a cusp to correct some little peculiarity in the articulation that we could not foresee. If we are forced to grind a crown which has the ordinary shell cusp on it, we are extremely liable to go through the thin plate of gold and expose the cement underneath, which means the failure of the crown within a short time. If you notice the section Dr. Goslee removed from the model bicuspid, which extended beneath the margin of the gum, you must have noticed that it had a certain amount of what I have

termed gingival contour. This should be duplicated in the artificial crown. The plain band fitted on the root does not restore the anatomical situation; the gums present a far more natural appearance and there is much less danger of gingival inflammation if we will contour the gingival portion of the band of the crown, and have it perfectly smooth and polished. Operators that I have known of, entirely ignore this precaution. I have seen crown after crown the edges of which could be seen duplicated on any tin can found in any back alley. Speaking of cans reminds me that many of the crowns resemble them rather than the natural teeth they are intended to replace, and I believe one may with perfect propriety refer to many of the "crowned" teeth as "canned" teeth.

I am glad the essayist has endorsed most of the old simple methods, for there is no need of complicated methods, in crown and bridge work. Dentists devise wild, weird methods, oftentimes as much to create a sensation, I believe, as for any other purpose. They talk about them, prepare and read papers on them, and more than nine-tenths of them are utterly impracticable. The simplest methods are the best; the best methods are the simplest.

Dr. B. J. Cigrand: I thank you for calling on me and I rise to compliment Dr. Goslee on his paper; it is useless to waste time in further commendation as we all recognize its merit. Dr. Perry in his remarks made one or two statements which I think he did not mean; he said he wanted the gold crown to go down and fill in the interproximate space. I believe he meant that we should reproduce the interdental space. I know that we as a profession to-day are crowning too many teeth that might be filled, and crowns should be the last resort to dental preservation. I have observed in my brief years of practice that conservative dentistry is the dentistry that will last, while the so-called "wild cat" bridge work has seen its best days, and humanity ought to say, amen. The spanning of a large bridge from the twelve year molar around the cuspid, or from the cuspid around to the other cuspid has been done too frequently and must be pronounced unscientific. We have been going too far in our enthusiasm. I must confess that I remove a large number of the gold telescope crowns and if these teeth had fallen into the hands of conscientious operators the teeth could have been saved by some kind of filling.

We are learning more and more about dental prosthesis; we are learning more and more about operative dentistry; we are

just beginning to get into the portals of daylight as to how to prepare our cavities; and what is true of operative dentistry is *doubly* true of prosthetic dentistry. We are realizing the truth in the point brought out by Dr. Noyes yesterday in his able paper, that there is too much machinery used in connection with the preparation of cavities. There is likewise too much machinery used in prosthetic work.

Another thing which impresses me is this: Many operators instead of producing their own gold telescopes and gold bridges, are sending them out to dental laboratories; and I am certain that by so doing the art of prosthetic dentistry will eventually fall into the hands of a few. I do not think this ought to be done, excepting in the most urgent cases when our time is limited and will not allow. Those of us who are crowning teeth with gold or porcelain, putting on Richmond or Logan crowns, should do these operations ourselves, or they should be performed under our own eyes and direction. I do not believe the laboratories can turn out this work as it ought to be turned out, since the patient is removed from them and their judgment of the case must be at fault.

Dr. Nyman has referred to ready-made crowns, and what he has said in reference to them is true. One word more and I will close. The subject of dental prosthesis has received too little attention at former gatherings of the Illinois society, and I am glad to know there is such an awakening in the *new art* of bridge work. There is a mechanical dentist, and there is a prosthetic dentist. One sends out for ready-made crowns, the other produces his own crowns. It is the purpose of every man in dentistry, and it is within the domain of every man in dentistry to have a general knowledge of the various branches of dentistry, and I do not believe in sending a patient from my office to that of another man unless I absolutely feel that I cannot do the operation. We all should try and make every effort possible to do the operation rather than to let a patient who comes to us pass into the hands of some other dentist. I believe our dental laboratories are a hindrance at the present day to true progress to prosthetic art. Every dentist should produce his operative results; likewise his own gold crowns, his own bridges and plates, and hence be the righteous "overseer" of the prosthetic work.

In conclusion, let me say that the Logan crown has not received the attention it deserves. I am a believer in the Logan crown

when it is properly set, when you have a good strong root in the anterior six teeth—superiors, if the root is *properly* shaped and I emphasize the word properly, and the opening of the pulp canal is not made so large that you can throw an entire crown in, but that the canal is reamed out carefully and the pin absolutely and tightly fits in the canal; if you will then cement an intradental band into the root there can be no danger of root fracture. Now add a disk of gutta-percha, or chloro-percha at the contact surfaces of this Logan crown, and put a *sparing* amount of oxychloride of zinc or oxyphosphate of zinc, and carefully bring it into position; the cement will then be sealed in the canal, being thoroughly protected from the fluids of the mouth because of the disk of gutta-percha at the contact surfaces, and we know from clinical experience that gutta-percha resists the hydrochloric acid and lactic acid better than anything we can place in the mouth. I believe the Logan crown, therefore, properly adjusted, and placed in position, etc., stands out as the only champion of the reproduction of nature, being free from the display of gold and having no exposed bands to inaugurate the various pathological results; while the Richmond crown, with its innumerable shortcomings, is causing the dental profession the troubles they are now engaged in. I have discarded the Richmond in "individual" cases and in its stead use the Logan as described. Of course, in bridge work or assembled crowns, we are compelled to employ the Richmond since it is a combination crown having porcelain and metal, the latter acting as a convenient medium for attaching neighboring artificial teeth.

Dr. L. O. Green: We have listened to one of the most complete and instructive practical papers that has been read before any dental society for a long time. Such papers are few and far between. What we want are practical observations in crown and bridge work. Dr. Nyman seems to think that we have a great many inflammations produced at the gingival borders by broken carborundum disks, cement, etc. I think these inflammations are the result largely of lack of thorough cleanliness and in guarding against irritations. I agree with the previous speakers in many respects regarding what they have said of seamless crowns, Logan crowns, and porcelain crowns. A porcelain crown presents a very æsthetic appearance when it is properly adjusted.

Dr. Goslee (closing the discussion): It is getting very late, and I shall not make an attempt to touch upon all of the various

points that have been brought out in the discussion. I wish to say a word or two along the line of thought mentioned by Dr. Cigrand, namely, that entirely too many teeth are crowned. My idea along this line is, that no matter how perfectly a crown fits, no matter how skillfully it is made, it never takes the place of the natural one, or it never restores the normal condition around the gum line that the natural crown preserves. Wherever it is possible by the operation of filling or inlay work to restore the lost portion of the crown of a tooth and preserve the natural condition around the gum line it is far better.

I was first urged to condemn seamless crowns because I am firmly convinced they are but a fad. My good friend, Dr. Perry, is much interested in them and says that it is easier to make a seamless crown than it is to make a crown by any other process. I will challenge Dr. Perry to make a seamless crown in double the time that I could make one by the method I have described.

As to diamond disks being preferable to carborundum stones, there is less flaking with them, which is an objection to the thin carborundums.

I did not have time to discuss in the paper many of the smaller details that were dwelt upon by Dr. Nyman, because I had already consumed too much time. As to backing up teeth, I do not know exactly who it was that referred to it, but I believe it was Dr. Nyman, who said that he did not believe that such was the best method, or that it was too round-about a way. It does not make any difference how you do it so long as you accomplish the result mentioned in the paper.

Dr. Nyman referred to the gingival contouring bands, which is a very important feature. I will endeavor to illustrate this on the blackboard. (Here Dr. Goslee illustrated the method of contouring these bands.)

I am thankful for the kind remarks that have been made on my paper, and would like to have had time to go a little further, but consumed all that I dared, and discussed those points that I thought would be of most interest to the members. If they have been so, I am very appreciative and truly thankful.

REPORT OF THE COMMITTEE ON DENTAL SCIENCE AND LITERATURE.

By A. W. Harlan, M. D., D. D. S., Chicago, Ill.

By a resolution passed some years ago a committee is appointed annually to report on what is new in science and literature. Of course, this means dental science and dental literature. In looking over the field of science we note that one paper on "Tubercular Infection" by examination of 220 mouths has been read before one of our own societies by Dr. Geo. W. Cook, of Chicago. This is a subject worthy of more study. Dr. J. E. Hinkins has made a further study on the supposed presence of arsenic in cement powders which is closely related to science, if it is not true science. That, however, I leave for you to determine. George Douglas Head has published a paper on "Leucocyte Count for Pyæmic Affections," which may very easily be turned to account in all deep-seated abscesses as a diagnostic factor.

Many papers have been published on the so-called pyorrhœa, but none so far during the past twelve months are to be dignified as scientific. The only really valuable paper of the year is that of J. L. Williams, on "Bacteriology of the Human Mouth" (*Dental Cosmos*, April, 1899). This is far away ahead of all similar productions published either in medicine or dentistry. Angle's work on "Classification of Malocclusion" is related to science, but as it is one not involving technique I only call attention to it as worthy of study. The various papers read on irregularities and orthodontia, particularly by C. S. Case, Jackson, Farrar and Goddard, are popularizing this form of practice and creating a demand for more finished artists, anatomists and mechanics than in any similar period since its arrival in 1893. The strides in this particular line have been so immense, due to the work of those mentioned and Angle and Guilford, that we are amazed at the perfection of the methods previously so little known. Nothing new in dental caries, or development of teeth; no new knowledge on therapeutics or chemistry that is tangible. None in the further

development of liquid air, as, so far, it has not been put to practical use. No new bacilli or other organisms discovered during the year. The studies on cocaine hydrochloride and eucaine B, have not been of more than clinical value. The newest practical antidotes for carbolic acid poisoning are vinegar and alcohol, both of which are on trial. The antidote for opium and its alkaloids which was proposed by Moor, three years ago, grows in favor, viz., potassium permanganate in solution for the stomach, for hypodermic use and also per the rectum.

DENTAL LITERATURE.

During the year enterprising publishers have issued quite a number of new books and several new additions of old books have come out. Among them are found "Methods of Filling Teeth," by R. Ottolengui, M. D. S. This work has been carefully revised and is well worthy of perusal. "Oral Pathology and Practice," by Dr. W. C. Barrett, is one of the new books of the year which may be read with profit. The writer is in favor of one man books, and this is a good one. Dr. H. H. Burchard's "Text-book of Pathology and Therapeutics" is also a good book of reference. Its practice is rather too much lacking in positiveness, but the subject matter is good.

Samsoies' book on "Plateless Dentures" in English is too antiquated for these rapid paces that we are taking. There is a new edition of Harris' "Dictionary on Dental Science," which has most of the new words well defined.

S. H. Guilford's work on "Orthodontia" is a gem from the standpoint of the laboratory worker. Any one can make appliances for regulating by having this book at his elbow, if he knows anything of mechanics. C. S. Tomes' "Dental Anatomy" is such an old standby that it is only necessary to mention it to say that it has been revised and augmented, so that it is really valuable. A. H. Thompson has written a book on "Comparative Dental Anatomy," which for brevity and conciseness leaves nothing to be wished for. It will be valuable for students and practitioners as well.

E. A. Smith, "Dental Metallurgy" is very good and is not too large. It is a good manual. The sixth edition of Gorgas' "Dental Medicine" is out. This book has had a steady sale and should be in all libraries.

The best book of the year comes from a new author, Broomell

(I. N.) "Anatomy and Histology of the Mouth and Teeth." Much of the book is original and the story is told so well that you are interested in spite of yourself. The most important books of the year in dentistry have been summarized, but a book that suits me may not appeal to your taste. Brunton's lectures on the action of medicines might suit a number of readers who are interested in medical science from the standpoint of practice.

A. P. Luff on "Gout" is a good book and it is well worth looking over. R. C. Cabot on the "Serum Diagnosis of Disease" is timely and will repay perusal. White and Wilcox "Materia Medica and Therapeutics" is a recent valuable work. It has been brought down to date by the American editor and is a safe guide. Dental periodicals have not been booming so much of late. One new in Australia, *Australian Journal of Dentistry*, one in England, *The British Dentist*, one in Mexico, *LaRevista Dental Mexicana*, and one in Austria. No new ones in the United States or Canada. Two dead in the United States. There is room for a good quarterly journal and also a weekly journal in the United States, well edited, and the contributions carefully selected and paid for.

But one criticism was made last year on this report, that the books spoken of, with others, ought to be exhibited to the society. If the society will make an appropriation of $50 to cover the expense, booksellers will exhibit, but unless they are guaranteed a sale they will not go to this expense. There is not much profit in medical books to the dealers except on a large sale, hence the impossibility of getting such a collection outside of Chicago for gratuitous examination. O. Amoedo has published in the French language an interesting work on *L'Art dentaire en medicine Legale*, which has not been translated into English.

Dr. Cruet has enriched dental science with a work on *Hygiene et Therapeutique des maladies de la Bouche.*

W. D. Miller, of Berlin, has published a work entitled *Lehrbuch der Conservirenden Zahnheilkunde.* A careful perusal will show that it should be given wider circulation by being translated into the native language of the author. It should not be difficult to form an international series of dental scientific text-books for universal use. My observation has been that books are not carefully studied. They are only skimmed and not again referred to by the owner unless he has occasion to prepare an article for publication. Reading clubs in large and small towns would be of value to dentists,

much more valuable than many of the meetings of societies. I throw out the suggestion for use where no active local societies are in existence. A chapter or two from a standard work would furnish better pabulum for an evening than the illy digested and poorly presented papers that we are frequently compelled to listen to. If practical subjects are needed, read chapters from a practical book.

In conclusion, the writer desires to express the opinion that these reports are only of value if the members will try to look up the works mentioned or the subjects alluded to. To do this will require time, and if it shall stimulate only one listener to store his mind with results of the labors of one author on gout, or syphilis, or surgery, or subjects in dentistry, materia medica, or even in prosthetic dentistry, he will be the richer for it. All matter which gains publicity through the pages of a dental journal is not as valuable as it might be if a more rigid censorship were exercised by editors. In consequence, many of the papers read before societies only become of value when the subject is thoroughly discussed by those present. I believe that a serious defect exists in nearly all societies through a misapprehension of the society for rotating programme committees. Few of the new members of such committees are qualified to select subjects for papers, hence we are at their mercy when, through ignorance or incapacity, they offer to a society a selection of titles of papers which will not show steady advances in all departments of dental surgery. The day for the discussion of ethics and legislation, capping pulps, or other well-worn themes, has passed. What is wanted to enrich periodical literature is the presentation of a series of studies on a given subject by those competent to handle it, and not so much fragmentary knowledge in the schoolboy style. This is an age of rapid advancement, and such subjects as digesting pulp tissue in the roots of teeth, post-mortem studies of abscess, erosion and electricity from the standpoint of therapeutics, would be of incalculable value. Further studies on calcific deposits in the roots of teeth, exostosis and suppuration might be added to the above. No certain method of producing local anæsthesia for the removal of pulps or the extraction of teeth has been discovered so as to make them of universal application. Studies on the redeposition of inorganic substances to reconstruct alveolar processes would be hailed with delight by the whole profession. Mechanical proce-

dures are far ahead of the strictly scientific, and it is only now that we are beginning to appreciate the work that has been done in the perfecting of alloys. So much might be said of the necessity for this kind of work that we hesitate to foreshadow the benefits that would accrue to mankind if such grave subjects should engage the attention of the studious investigator. The labors of such men of science as Miller, Andrews, Mummery, Broomell, Black, Rose and others should stimulate those who have a fancy for knowledge, aside from its commercial value, to delve further into the region of the unknown subjects which we have faintly outlined and thereby enrich the field of dental science.

DISCUSSION.

Dr. J. G. Reid: I consider it a great pleasure to say that this is the best report from this committee on this particular subject that has ever been presented to the Illinois State Dental Society. It comes nearest to filling the bill of what this committee is expected to do. It seems to have taken many years apparently to get this committee to understand what its obligation is in this matter, and these annual reports are now reaching very nearly perfection. It is certainly gratifying to me to speak in a complimentary way of the report that has been presented.

Professor Watling, of Ann Arbor, Michigan, was called for. He said: I came here to learn rather that to talk. I am a first-rate listener, but not very much of a speaker, and I do not know that there is much chance for discussion on a paper of this kind. It certainly has been ably prepared, and we know that Dr. Harlan has spent much time in looking up the subjects of which he treats, and a person who has not studied the literature as he has done is not able to add to the interest of the report. I was much pleased with it and have learned a great deal by listening to it. I thank you very much for being called upon.

Dr. Edmund Noyes: This paper is a striking illustration of the value to a society of getting the right man to do a certain work, and then let him continue it from year to year. I had the honor to propose this Committee on Dental Science and Literature; and while I do not believe that the criticisms we have had in previous years upon these reports were entirely justified, it is true there has been great improvement, and this is nearly an ideal report. There is only one thing in it which I wish to say anything

about, and that is with reference to small coteries or clubs of dentists or small dental societies. In towns where there are two or three or perhaps half a dozen dentists, arrangements should be made for these men to spend an evening together occasionally. They can select the most interesting articles in our dental journals and freely discuss them. The published papers are much more numerous now than forty years ago, and the practical subjects on which ordinary men can write have become rather trite, and the members of a small club that meets frequently, may often get more good by reading a paper out of a dental journal and thoroughly discussing it than by hearing one written by one of themselves. We have need by all means in our power to encourage the fellowship of dentists, to encourage the interchange of thoughts and views, and especially the friendship of men who are practicing in small towns. It is more important in a town where there are less than half a dozen dentists that they should all be friends than it is that all should be friends where the number is much larger. It must be admitted, without question, that the necessity of the unaccustomed labor of preparing the papers is in many instances a serious difficulty in forming such small societies and keeping them together afterward. So I will welcome this suggestion very heartily indeed.

Dr. J. G. Reid: I want to refer to one point incidentally touched upon by Dr. Noyes, and that is in relation to the periodical literature. I doubt in the smaller towns throughout the country, where there may be found from five to ten dentists, whether each one of them is supplied with the best dental journals. I have visited dental offices in such places, and have taken the pains to inquire quite frequently as to the number of journals that are generally subscribed for by these dentists. I find that perhaps they will subscribe for one journal, and it is rare for them to subscribe for two or three dental journals. They may take a dental journal published in their State, if such a journal happens to be published there. Generally we will find the *Cosmos*, or one of the leading dental journals. Now, it seems to me, in places of that kind the dentists could get together, subscribe for the best journals, and have readings in the manner described by Dr. Noyes. The expense would be small; at the same time, it would do much good, and they would keep posted on various subjects. It is well known that the best dental journals do not publish any matter that

has been republished. It must be original. Take the *Dental Cosmos*, the *International Dental Journal*, the DENTAL REVIEW, and one or two others I might mention; they are exclusive in their literature, and all the rest of the dental journals usually clip from them. It would seem to me that this would be an excellent way of spending one or two evenings every month. They could get all the dental literature in small towns through the dental journals. This is a happy thought and ought to be encouraged. I believe it would bring about a more harmonious feeling among country dentists.

Dr. P. J. KESTER: I agree with the previous speakers that this report comes being more nearly ideal than anything we have had for years. It is interesting and valuable, and I am sure will be read with great profit. The suggestion in regard to the study of text-books is of great importance to dentists. I am satisfied that the average young man, after he graduates, after having studied his text-books more or less faithfully, feels that he has done with them as soon as he begins to practice. If we were to study our text-books with the new editions that appear from time to time, it would result in a great profit to us. The articles which appear in our dental journals would be largely improved. There is considerable truth in the suggestion that the papers which appear in our dental journals after having been read before societies are imperfect and unsatisfactory. I have myself presented papers to dental societies which I felt were crude and imperfect, and I can readily see that if I had given more time to the study of text-books and kept abreast of the times, that the product would have been much better. We can profitably consider the suggestions that have been offered by Dr. Harlan in his report.

Dr. C. R. TAYLOR. I wish to commend Dr. Harlan's suggestion in reference to the point touched upon by Dr. Noyes, and that is reading papers instead of writing them for small dental societies. In our town (Streator) we have an organization, and we all agreed to read a paper once a year. As I was the oldest practitioner in the organization, the duty fell on me first to write a paper, and it was the only paper written by the members. Here is a report dealing with subjects that every one of us can at least read a paper at society meetings. The question is in selecting something good to be read.

There is another thing we want to do, and that is to think

more. What we want is the power to think, to cultivate the mind, so that we may have opinions of our own rather than those of others. Follow no book except as an inspiration. We read enough, but we do not think half enough. Education needs to be in the line of drawing out from the boys and girls, men and women, and not pumping something into them. Let us try to digest what we read and think more. That is what I need, and I am just an average man. Acting in accordance with the suggestions of Dr. Harlan, we should select something for our individual investigation, and all of our education must necessarily be along the line of the laws that govern the universe, and whenever we try to build up some scheme which is not in accordance with those laws, we are creating obstructions that will be swept away, and all that we have tried to build go with the destruction of the obstructions, and we will have to start again and lay the foundation and build in accordance with the laws of our lives and the laws of the universe if we hope to build for the best.

Dr. Garrett Newkirk: I simply rise for the purpose of saying a good word for this report. Probably enough has been said, but I wish to add my opinion to those that have already been expressed. It is an excellent report, and one of the most perfect we have ever had presented to us. I want to take exception to a remark made by some one just now who said that it was the first report we have had which met the requirements. We have had a number of reports from Dr. Harlan that have been excellent, two quite as good as this one. It is only a continuation of the good work he began years ago.

Dr. Elgin MaWhinney: I wish to commend this report. I think I have never heard such a helpful report. Now if we had a dental journal that would devote a couple of pages each issue to the subject matter of the books referred to it would indeed be most helpful. Busy practitioners have neither the time to read nor money to buy *all* the books issued on dentistry or medicine—and here a journal could be of great benefit by presenting brief abstracts and reviews similar to the work done by the *Literary Digest* in the field of general literature.

I believe such a feature would not only attract the attention of the dental profession but would remunerate those who undertake it.

Dr. G. D. Sitherwood: I rise to add a word or two to this

report. I like it, and have been greatly pleased, indeed, with it. There is one point in the report with reference to small societies which occurred to me might be made profitable, and it is this: I would like to know if it is not possible for us to have an epitome of each of the books mentioned in the report. Some of these books I will not have time to read, and it seems to me that those who read German and French could give us the gist of these books in an annual report. While it might make the report somewhat lengthy, I am sure it would be excellent and profitable reading. There are many literary men throughout the country who are constantly reviewing books. I had occasion last year myself to review the writings of a celebrated French author, and I could only get the edition of his books which were a hundred and forty-six years old, and I regretted very much that I was not able to read French; I had to take the English translation. The suggestion of Dr. Harlan might be made very profitable by dividing the work among the dentists in small societies, taking these books, or picking out a book and reviewing it and giving his fellow practitioners an epitome of the book.

Dr. G. V. Black: I wish to say, that I like this report very much, and I have nothing but commendation for it. I also liked very much the range which this discussion has taken. But I rise rather to present another thought along this line than to discuss what has been said. The report is a report of current dental literature for the year, and it is all right. But we are now about to end a century of work in the dental profession, and the thought comes to me that such a man as the chairman of this committee might do us an excellent work for the next year by going aside from the routine work and giving us a report of what has been done in the dental profession say in the last half of the present century. A very large proportion of this work relates to the work done for a year; it is good in itself, well planned and well undertaken for the time-being, but it is necessarily much of it a literature that is temporary in it character. As time goes on certain things are developed that stay with us; they are adopted by the profession and utilized in our every day practice and become common to the dental profession. What is it that has been developed and made common to us within the last fifty years? Other things are developed and ideas presented. Many new things that are brought forward are discussed, studied, tried, and dropped under the law of

unfitness for the uses intended. How many of these things have come into the profession and passed out within the last fifty years and have come in again perhaps and passed out, and are liable to come in again in the future and pass out? A paper or addition to this report which would take up this phase of the subject and give us the doings of the profession, the discoveries and inventions, not of a trivial sort, but of the sort that have made a lasting impress upon the profession that have come out within the last half century, would be of great value, and it seems to me a discussion of it at our next meeting would prove of great interest.

Dr. Harlan (closing the discussion): The general expressions of commendation of this report are very satisfactory, and about the only thing I have to say is, that if it takes as much time to epitomize the progress of fifty years as it did this, I would not do very much next year. Even the little report I have presented to you has taken perhaps one hundred hours of my time, and there is no telling how long it would take to make a half century report.

With reference to the stimulating articles in the *Literary Digest* and other magazines, I would like to say this from the standpoint of a dental editor: The men who are engaged to do this kind of work are paid for it, and do not do anything else. If we could train a man to be attached to a dental journal to epitomize dental literature in this way, it would be a good thing. There ought to be five or six pages of it every month, and that means that the one who does it must devote considerable time to this work, because he has to look over a large number of books and periodicals, and read them more or less carefully in order to present them in an attractive style. I have tried this myself, and I have come to the conclusion that a man cannot do it successfully and practice dentistry. Then, too, there is not enough remuneration in the publication of a dental journal to justify a man in giving up his practice to present five or six pages a month in the form of a digest. I will present the matter to our publishers, and if they are willing to hire some one to do it, I will be glad to inaugurate that system.

REPORT ON DENTAL ART AND INVENTION.

By J. E. Keefe, D. D. S., Chicago, Ill.

Your committee on dental art and invention respectfully submit the following report :

Since our last meeting there have been 212 patents granted on instruments and appliances pertaining to dentistry.

Your committee has during the year communicated with 128 of the 212 patentees, many of whom have responded, some with models and others with descriptions of their various inventions.

A large number of these are practically useless to us, and as such shall not be presented. Many of the instruments which will be presented we cannot pass judgment on, not having had them in possession long enough to experiment with. Those which have been tested the committee offers criticisms on. The first under consideration is a compressed air and water syringe by A. C. Clark & Co., of Chicago. This syringe almost reaches perfection. The mechanism it will not be necessary to explain. It is automatic in action. By holding the syringe between the finger and thumb and pressing in any direction, one breaks the valve communication, which allows the air to escape.

The value of this instrument will be appreciated by all who examine it.

No. 2. We next take up the little giant separator, by Dr. Henry W. Gillett, of Newport, R. I., manufactured by S. S. White Mfg. Co. These separators come in three sizes and are powerful little instruments. They are accompanied by a key which is magnetized at both ends, for the purpose of holding the nut while adjusting it, it being too small to handle with the fingers. The small size of these separators makes them very difficult to manage, especially on the bicuspid and molar teeth.

Then again what seems a great objection is the fact that in tightening the screw it must necessarily work down between the teeth on the gum tissue, thereby causing the patient severe pain. Could this fault be overcome, a great deal might be claimed for it.

No. 3. The next is an adjustable slip joint, manufactured by the Dental Protective Supply Co., Chicago. The special advantages claimed for this slip joint over others now in the market is, that the bearings are cone or taper shaped and are adjustable, so that the wear can be taken up, which is not the case with any other instrument of this kind.

No. 4. Next the Capewell improved dental separator. This separator was presented to you last year in a crude form. There have been some improvements in it which makes it a valuable instrument in some cases.

No. 5. The Lewis crown articulator, manufactured by the Buffalo Dental Mfg. Co. This instrument presents some new features, the most prominent of which is the side or lateral motion by which a test of the proper occlusion of the cusps of the crown can be obtained.

No. 6. Moore's universal spring apron. This apron is intended for wear in the laboratory. It can be made of any material, and is held in place by springs inserted into openings around the neck and waist-bands and springs. When it is necessary to wash this apron, these springs are easily removed and as easily replaced.

No. 7. The dental clamp mirror, a suggestion of Dr. Chas. Hamdon, of Bowmansville, Ont., sold by Dr. J. W. Ivory, Philadelphia. This mirror is so constructed that it can be slipped into any clamp, and set at any angle. This is a very simple and useful appliance.

No. 8. Automatic disk mandrel, No. 320, manufactured by S. S. White Co. This disk mandrel locks automatically when pins are pushed through the shank of the mandrel. This promises to be a good mandrel, the only objection being that if pressure is put on the disk the pin will slip out. The sample given us to test, however, may have been imperfect.

No. 9. The general separator, manufactured by the S. S. White Co. This is an improvement on the Perry two bar separator. This instrument has all the advantages of a perfect separator. Possessing so many merits it is necessarily somewhat intricate in its mechanism. It can be so adjusted as to separate any teeth. It has two stops which can be adjusted by a flexible wrench which can be set when clamp is in position to prevent that very objectionable feature of most clamps, that is, of slipping down on

the necks of the teeth. This invention is not a new one, but so many dentists have not yet seen it, we thought it well to present it to you this evening.

The following instruments have been sent for inspection, and most of them seem admirably fitted for the capacities for which they are intended:

Dr. W. M. Seeger, of Louisville, has sent us a new tooth crown and two appliances, a rubber dam holder, carrier and sheet protector for flexible saws, which will be on exhibition.

Dr. John F. Snedaker, of Ogden, Utah, has sent a handpiece and frame for dental saws.

Dr. John F. Davidson, Richmond, Va., tooth filling material.

Dr. W. O. Talbot, Biloxi, Miss., an instrument designed for measuring size of jaw and distances between teeth.

The Bonwill blowpipe, sent by the Consolidated Dental Mfg. Co.

An automatic jaw brace, by Dr. R. L. Halperin, Chicago.

A new matrix retainer, by Dr. J. W. Ivory, Philadelphia.

A gold crown holder, by Dr. J. W. Ivory.

A new single action plugger, by Dr. J. W. Ivory.

H. D. Justi & Son have sent the following articles: A set of Nelson dummy gold teeth crowns; Beutelrock's nerve pulp canal instruments and Young's adjustable perforators for punching two holes at once, this being an improvement on the old one; also, Power's engine mallet, which is an improvement on the old one.

Dr. R. H. Antes, of Geneseo, Ill., has sent us his improved dental plugger, the improvement being the striking of the hammer in the head of the handle holding the plugger. The doctor also sends three models, showing his method of preserving samples of bridge work, as he has put them into different mouths.

The S. S. White Co. have sent the following:

1. Shriver's bridge repairing pliers for fixing facings without disturbing bridge.

2. Perforated flexo filed, adapted for insertion in split chuck.

3. Vulcanized rubber rests for instruments.

4. Herbst steel polishing strip for finishing fillings.

5. The Avil engine mallet, with swiveling or adjustable head, which can be placed at any angle and impart a direct blow.

6. The Elliott adjustable angle broach holder, enabling

broach to be inserted at any angle in tooth canal, when chuck can be released and rotated between thumb and finger.

7. Combined cotton holder and waste receiver with removable metal cap and glass cup.

8. Fyrite, a superior investing material for crown and bridge work, protects the teeth and does not crack in firing.

9. Bracket table lamp, No. 22, can be fastened and suspended from any bracket table; cylindrical glass receptacle for alcohol.

10. Articulating disks—to facilitate the fitting of Logan crowns to natural roots.

REPORT OF THE SUPERVISOR OF CLINICS AT THE THIRTY-FIFTH ANNUAL MEETING OF THE ILLINOIS STATE DENTAL SOCIETY.

By L. W. Skidmore, D. D. S., Moline, Ill.

The supervisor of clinics begs leave to report as follows:

BY DR. J. B. BROWN, BLOOMINGTON, ILL.

No. 1. Patient. Left central. Bleaching, using twenty-five per cent solution of pyrozone and hot air, bringing it out in forty minutes to quite its normal color. 2. Left lateral, badly discolored, using same process and the same results with thirty-five minutes time.

BY DR. H. B. BULL, FAIRBURY ILL.

No. 2. Bevel facing from near pins to the cutting edge. Burnish pure gold backing on facing. Bend piece of 22 k. gold thirty inch gauge about the size of the backing, remove the first backing, place the two together and catch with solder; replace on facing and place on articulator; bend second backing on a line with the cusps, remove and fill between with solder, replace and try cusps for articulation; catch cusps and backing with wax then put in pliers and solder. Replace on facing, bend pins down, finish cutting edge, and tooth is ready for investment. Advantage: Easy and perfect articulation, easy to finish and less liability to fracture.

BY DR. JAMES W. CORMANY.

No. 4. Patient, G. S. Spear. Gold filling in anterior proximal surface of the left superior central, using Bonwill mallet No. 2. This was a large filling occupying at least one-third of the tooth. It was well anchored, and packed and condensed as well as the electric power would give and in spite of the current being off part of the time the doctor prepared, filled and finished the filling in sixty minutes.

BY DR. S. FINLEY DUNCAN, JOLIET, ILL.

No. 6. Attachment for bridge to anterior teeth without amputation of natural crown.

Drill into the natural tooth on the lingual surface, devitalize and remove pulp. Enlarge pulp canal to receive a square iridio-platinum wire, sixteen gauge. Countersink opening and cut groove

or slot to the side next the bridge-tooth, beveling the edges carefully. Into the countersink and groove burnish pure gold plate, thirty-two gauge. Through this pure gold insert retaining post into pulp canal; remove post and gold plate together and solder together, using 22 k. solder. Replace in tooth and burnish again to be sure of accurate adaptation and trim flush with margins. Remove again and fill with 22 k. solder; replace in tooth, take impression, run model, grind up dummy and solder to attachment and cement in place. This operation can all be done with the rubber dam in place which is a very great advantage, especially when cementing into position, as everything can be kept perfectly dry until the cement hardens thoroughly.

DR. F. B. KREMER, MINNEAPOLIS, MINN.

No. 7. Patient, Mr. Shuey, student. Unable to get patient for the kind of operation he desired to show; so in order to fulfill his part put in a straight gold filling in an occlusal cavity in the left superior first molar, which was exceedingly well performed.

BY DR. F. H. MCINTOSH, BLOOMINGTON, ILL.

No. 8. Demonstrated the application of the Hatch clamp and the ivory matrix. No suitable patient could be secured to show the working of the S. S. White moss fiber gold as the doctor had intended and came prepared to do.

BY DR. GEO. S. MONSON, ST. PAUL.

No. 10. First superior *left bicuspid*, the cavity involving the mesial surface extending across the occlusal surface, and the whole of the distal surface, including the disto-buccal angle to the extent of one-fourth the buccal surface.

The margins were extended lingually and buccally to allow perfect cleansing of the same during masticating.

The cavity was filled with unannealed soft foil up to the step, the remainder of the cavity being filled with annealed soft foil. Completed operation; model filling; a credit to the operator's ability. Time consumed about an hour and three-quarters.

BY DR. WILLIAM W. SHRYOCK, FORT WAYNE, IND.

No. 11. Removable facing for crown and bridge work, and applying the countersunk nut in orthodontia.

This clinic was explained by steps. First. Selecting the facing. Second. Grinding the facing. Third. Burnishing pure

gold, thirty two gauge, to the facing. Fourth. Filling in the backing. Fifth. Countersinking the holes. Sixth. Cutting the threads on the pins. Seventh. Each step in making the gold nuts with the Moseley lathe. And Eighth. The finished facing, making a beautiful piece of work, displaying much skill and complete thoroughness.

The countersunk nut was shown in a case of orthodontia where the left superior cuspid closed inside of the lower. The appliance was the original one, and very interesting, as it is the first time the countersunk nut has been brought before the profession in orthodontia.

BY DR. F. A. ROE, OF BURLINGTON, IOWA.

No. 12. A short and accurate way of making a gold crown.

Trim tooth perpendicularly so that measurement will slip off.

Make band longer than is necessary and fit same beneath gingival margin accurately.

If tooth is broken down remove band and place modeling compound upon the top of the tooth and allow patient to bite into it. Trim off the surplus perpendicular with the sides of the tooth and contour the top as you wish crown when done. Replace the band. Mix Teague's compound and press into top band and allow it to harden.

Remove band, being careful not to spring the band, thereby breaking the Teague's compound. The modeling compound placed on top of the tooth will remain in the band, which must now be removed. Pass the band into a hole punched in rubber dam, having the dam fit close to the edge of the festooned edge of the band. The band will now be suspended in the dam.

Place this over a Melotte's ring and pour with Melotte's metal. You will then have a complete metal model of the tooth, just the proper length. Now improve the form of the top of the metal tooth as you wish.

Cut the surplus length from top of band, slit it and draw it against the model. Now place a piece of cap material in place on tooth, and swage with a pine stick.

The crown will fit the gum perfectly and articulate perfectly without any grinding of any description.

This is very nice for making piers for bridges quick and accurate.

BY DR. J. W. SHEDD, PONTIAC, ILL.

No. 14. Patient, Geo. F. Knapp. Proximo-occlusal gold filling in superior right first molar with Pack's cylinders semi-cohesive throughout, annealing after filling is well started, using Mason mallet. This was a very large filling and consumed a good bit of time, but made good, substantial filling for service.

BY DR. C. H. WEST, FARINA, ILL.

No. 16. Placed an amalgam filling with step retaining extension on the posterior proximal surface of first superior molar, using the Booth matrix holder. This is in the form of a clamp, having concave shaped wedges to conform to the contour of the teeth, which, upon application, separates the teeth slightly and at the same time holds the matrix so that the amalgam can be placed in a distal cavity as easily as a simple one. When the matrix is removed the filling will knuckle against the next tooth in a natural way. Two proximal cavities may be filled at the same sitting by placing two thin matrices between the teeth and applying the matrix holder between them. Can be had of Jas. T. Ingersoll, St. Paul, Minn.

BY DR. EUGENE R. WARNER, DENVER, COLO.

No. 18. This method of pressure anæsthesia and anæsthesia by absorption where exposure of the pulp exists, consists essentially of placing a small pledget of cotton or spunk with cocaine or eucaine crystals moistened with carbolic acid, alcohol, distilled water or other media upon the exposed part and cover with a small piece of unvulcanized rubber. Pressure is made with an amalgam plugger, burnisher or any other suitable instrument. Crowding upon the pulp will cause a slight response, but pain in a measure is a keynote to success, in that it indicates pressure, and that is necessary for quick absorption. Be sure and confine your solution so that absorption will take place. If anæsthesia is not complete in thirty to sixty seconds expose pulp more freely and reapply. This method works most happily on healthy pulps, but is applicable in all cases where complete or partial life is present in the pulp chamber or canal and quick action is desired.

BY DR. E. K. WAEDELSTAEDT, ST. PAUL, MINN.

No. 19. Patient, F. Garrett. Test with the gnatho-dynamometer ; 110 pounds on second bicuspid ; cavity mesio-occlusal on left upper second bicuspid. Measurements of tooth : Length, 66 ; width, 56½; thickness, 91.

Cavity: Linguo-bucco-gingivally, 61; linguo-bucco-occlusally, 58; width of step, 32; width of anchorage, 31½; length of step, 25; width of seat, 19; entire depth of cavity, 56; depth of step, 32; pulpal depth, mesio-disally, 24; depth below step, 24; depth of anchorage, 24.

Time of preparation of cavity, 36 minutes; time of inserting gold, 35 minutes; time of finishing filling, 30 minutes.

It took 43 pieces of gold to fill the cavity, and the weight of the gold was 24 grs.

Dr. Wedelstaedt was accompanied by his own personal office assistant, Miss Falk, who lent interest to the clinic by the facility with which she anticipated every want of the doctor throughout the operation.

The result of the clinic was a contour filling of dense structure, beautiful form and finish, and securely anchored in place. It was a masterly demonstration of the most modern methods of cavity preparation and gold insertion, and was only another example of the possibilities in tooth preservation of an operator who is thoroughly familiar with his subject and has the ability to carry out his highest ideals.

BY DR. CALVIN S. CASE, CHICAGO.

No. 20. Dr. Case showed cases in fracture, orthodontia and artificial palates, during process of correction, making a most instructive and practical clinic. One that must be seen to be fully appreciated. The doctor is doing a wonderful work in this line of practice.

BY DR. P. J. CIGRAND, CHICAGO.

No. 21. Patient. A method of filling root canals with sandarac varnish and gutta-percha points. The varnish can be easily worked into the pulp canals—much more so than chloro-percha. In contracting it sticks to the walls of the canals or periphery which is the opposite to chloro-percha. The gutta-percha points are not softened or dissolved when introduced in the canals as the varnish does not act on them. The pulp chamber is left in a favorable condition with view of canals not obstructed, varnish being transparent.

BY DR. T. L. GILMER, CHICAGO.

No. 23. Operated for the cure of facial neuralgia. Removing branches of the fifth nerve. Patient was removed to St. Luke's Hospital and was comfortable at the last report.

The patient we present to you this morning is seemingly in perfect health. He is robust, and has never had a severe illness. He is fifty-four years old. For nine months he has had paroxysms of pain, with increasing severity and frequency, on the right side of the face, principally located in the upper lip and nose. He says that the pain is so intense and frequent that life is rendered almost unbearable. The slightest touch on the lip, the act of speaking or eating, or a draught of air produces one of these paroxysms, and at times they come on when there is no apparent cause. He has at times been so disturbed at night that sleep was impossible, and narcotics have been resorted to in order to secure rest. All of the causes such as syphilis, malaria and other diseases which might be amenable to internal medication have been excluded, therefore nothing remains but reliance for relief, temporary at least, and permanent we hope, on surgical interference. In this case I am of the opinion that resection of the superior maxillary nerve offers the best hope for a permanent cure. The cause of the pain we have not discovered. It may be from pressure on the nerve in its canal in the infraorbital plate of the superior maxilla, caused by an outgrowth of bone from the canal wall, or from neuritis, or it may originate in the skull and find expression in the branches of the nerve exterior to the foramen rotundum. The patient has been intelligently treated by internal medication with no benefit other than temporary. The case is clearly *tic douloureux*, or neuralgia of the second division of the fifth pair of nerves. This nerve passes out from the skull through the foramen rotundum, thence downward and forward across the spheno-maxillary fissure into a canal in the infraorbital plate, and finds exit from the canal through the infraorbital foramen. A number of branches are given off from this nerve, the two principal branches being the posterior and anterior dental. The former is given off just at the entrance of the main nerve into the canal, the latter just before it emerges from the infraorbital foramen. The canal in the orbital plate curves markedly outward, forming nearly a quarter of a circle in its course.

Having seen how the nerve traverses the space between the foramen rotundum to the infraorbital foramen, we are able to speculate as to the best method for its resection. The simplest method which will most surely permit of the complete bodily removal of the nerve including its leash to a point near

est the foramen rotundum, promises the best results. The stretching of nerves for the cure of neuralgia has often given relief, but the pain very soon returns. The tearing out of the nerve after securing it at the infraorbital foramen is a little more satisfactory, but as it is impossible, on account of the circular shape of the canal in the infraorbital plate, also on account of the large branch given off just inside the infraorbital foramen and another branch given off just as the nerve enters the canal, to remove more than the shortest piece of the nerve by evulsion, this operation is of but little more value than section or short exsection, at best; therefore, a better method is indicated.

The simplest and best method is to make a circular incision through the soft parts to the bone below the orbit so as to just pass the upper border of the foramen, which we will now do, of one and a quarter to one and a half inches in length. The periosteum, with the soft parts, are now lifted from the rim of the orbit and from the infraorbital plate back to the spheno-maxillary fissure, where the nerve will be exposed as it enters the canal in the orbital plate. The bone covering the canal being extremely thin, is easily cut away by the engine and bur. We make this cut nearly up to the rim of the orbit. We now seize the nerve by a blunt tenaculum and elevate it, and carry a ligature under it by an aneurism needle and tie it. This affords a means of traction on the nerve which is not nearly so liable to prematurely separate it as if held by the hæmostatic or other forceps. Traction is now made on the ligature and the nerve is drawn forward, when, with a pair of small curved scissors, I cut it off as far back as possible. During this part of the operation, and while raising the periosteum you noticed that I elevated and supported the eye with a small silver teaspoon. The concavity of the spoon just fits the eye, its general outlines being adapted to the shape of the orbit, and it also acts as a reflector. The nerve is now elevated just outside the infraorbital plate and secured by a ligature. Tension is made on this, and the leash is dissected out of the lip. The nerve may now be forcibly withdrawn. The anterior dental branch offers some resistance. It is probably large, but by cutting off the posterior portion and twisting the main nerve and making traction it comes away. We now pack the wound to staunch the hæmorrhage. The gauze is now renewed, the parts replaced, the wound sutured with horse hair and dressed without drainage. There will be no scar worth

consideration if we get primary union, which we expect. The advantages of this operation are, its ease, perfect vision of the operation from start to finish, and the certainty of removing a definite amount of the nerve trunk at the closest possible point to the foramen rotundum.

BY ROBERT GOOD, CHICAGO.

No. 24. Treat pyorrhœa alveolaris, "Younger method." Dr. Good showed two patients that had been treated. Case No. 1. Mr. G., whose teeth were discharging pus, and a number of them loose before being treated.

When seen at the clinic all teeth were firm, no pus discharging, and a good union between tooth and gum, except in one place which was under treatment.

Case No. 2. Dr. Mullin. The discharge of pus had been stopped on all the teeth and a union had been secured between gum and tooth with a number of them and new granulations were being thrown out around a number of others. Dr. Good removes thoroughly all deposits from the root and treats the old pyorrhœal pocket with an acid that is powerful enough to destroy any dead tissue that may exist and create a new fresh granulating surface.

BY DR. A. W. HARLAN, CHICAGO.

No. 25. Pyorrhœa alveolaris. Several cases were examined but only one was treated. The operation consisted of denuding the roots of foreign matter, cleaning the pockets with boro-glycerine water, ten per cent. This was followed by a ten per cent solution of trichloracetic acid in water. Such a solution coagulates and seals the pocket completely. Dr. Harlan explained his methods of treatment in detail to several groups of listeners, and emphasized the fact that a *sine qua non* for success in the treatment of loose teeth was to fix them immovably, cleanse the roots and sockets of foreign matter, disinfect the pockets, and coagulate them. After ten days the case is to be carefully examined to complete any imperfection in the first operation, and, if necessary, recoagulate the pockets or pouches.

The patient is to use massage of the gums and keep the mouth clean in any approved manner. Any complications are to be met as they arise, and if the patient is suffering from concomitant maladies they are to be treated systemically.

BY DR. J. E. HINKINS, CHICAGO.

No. 26. Dr. Hinkins' clinic, removal of deposits, showing the advantage of a new set of Dr. Case instruments.

BY DR. GARRETT NEWKIRK, CHICAGO.

No. 27. Management of children in the dental chair with special reference to the deciduous teeth.

BY DR. JOHN EGBERT NYMAN, CHICAGO.

No. 28. A porcelain bridge from start to finish. A suitable practical case not being obtainable, the doctor demonstrated the construction of a porcelain bridge detail by detail from start to finish, upon a model which he had specially prepared and which approached as nearly as possible the conditions met in a mouth. He had inserted two natural roots in about the position they would occupy were it a practical case. The roots used as abutments were banded after the usual manner, with twenty-eight gauge pure platinum. The lingual half of the root and band were trimmed as nearly horizontally flat as was possible, without regard to the gum contour; while the buccal half was cut down accurately to the gum border. This was done to give the bridge a substantial seating and to facilitate the adaption and soldering of the cap to the band, it being a comparatively easy matter to adapt and solder the cap to the flat portion of the band. This was done. It was then placed upon the root again, and the cap burnished into contact with the buccal half with a large hand burnisher. This secures the accurate adaption of the cap in the most expeditious manner possible without any danger of springing the band out of shape. The material used for the cap was pure platinum, thirty-one gauge. The band was soldered with forty per cent platinum solder. The cap was soldered to the band with thirty per cent platinum solder. The lingual root canal of the molar was then enlarged to proper depth sufficiently to allow the insertion of a fourteen gauge iridio-platinum post, and the lingual root canal of the bicuspid was also enlarged sufficiently to insert a sixteen gauge iridio-platinum post. The two caps were then placed in position, openings drilled through them directly above the enlarged root canals, with direct cone burs of suitable size. The two posts were then tapered and forced through these openings up to their position in the root canal. Modeling compound was then

pressed around the caps and the posts, part of which protruded above the caps. The posts and caps were then removed from the roots, replaced in these small modeling compound impressions, and the inner part of the caps were filled with investing material, carrying it part way upon the posts. As soon as this was dry, the modeling compound was removed and the posts soldered to the caps with thirty per cent platinum solder. The caps were now replaced on the roots, an impression taken which extended from one cap across the intervening space to the other, and was not intended to include the adjacent natural teeth. After removing the impression, the caps were removed from it, the holes occupied by the posts filled with soft wax, and it was dusted freely with soapstone. A plaster model was then run from this impression, care being taken to remove the impression intact. This model was trimmed so that a die could be run from it of zinc or Babbitt's metal, in molding sand. A counterdie was then run with Melotte's metal. The saddle was now swaged up to this model; the gauge of metal used in the saddle was entirely dependent on the condition of the gum, to be determined by the judgment of the operator; thirty-one or thirty-two gauge if the gums are exceedingly hard and unyielding; from that varying to twenty-two gauge when the gums are very soft and spongy. The saddle was then swaged to about the width that the natural tooth would have occupied in the space bucco-lingually. It was cut out as narrow as possible in the same direction at what would be the interproximate spaces. This having been done, the saddle was turned upside down and placed in the original plaster impression; the wax was removed from the post holes, and the caps placed in position; the model was then run in this of investing material, composed of two parts plaster, two of fine shredded asbestos and one part fine powdered silex. Upon removing this from the impression, it was found that the saddle was accurately embedded in the model just the thickness of the metal used, the doctor claiming that this was the only method of accurately embedding a saddle to a uniform depth in the model, and consequently in the gum tissue; he claiming that it was beyond possibility to trim a plaster model by hand accurately to a uniform depth over any extended surface, owing to the varying density of the material. An iridio-platinum crossbeam made of fourteen gauge round wire rolled down to sixteen gauge and set on edge was then fitted in between the two posts, and was

sent so as to rest upon the saddle as closely as possible. The baddle was now soldered to the cap, and the crossbeam to the posts, caps and saddle with twenty per cent platinum solder. This completed the metallic structural foundation of the bridge. The piece was then again placed upon the original model, as it would be done in the mouth in a practical case, and the edges of the saddle burnished in at spots where the appearance of the gum might indicate that it could be fitted closer. A modeling compound bite impression was then taken; the inside of the caps were filled with wax so that the structure might be removed from the articulated models, which were then run up. Suitable facings of the proper color were then ground to position and waxed in place with merely enough wax to hold them and no more, the under side of the pins first being ground off to a flat section. The case was then invested, and as soon as the investment was set, the wax was removed from around the pins and crossbeams, picking it out with instruments, and dissolving out the film that remained on the metal with chloroform. The pins were then bent by the aid of suitable instruments into actual contact with the crossbeam. A minute quantity of borax in solution was painted at the joint of each pin and the crossbeams, and a very small piece of pure gold plate was laid at the same place. The use of the borax was not necessary, of course, as there was no danger of oxidation between these metals, but was done, first, because it pinned the pieces of gold firmly in place upon its being slightly heated, and, secondly, because the gold in flowing would be more apt to confine itself to the area subjected to the borax. Pure gold was used as a solder to avoid the necessity of carrying the heat so high as to endanger the delicate yellow shades in the necks of the facings, there being no danger of the pins becoming unsoldered, as they were in actual contact with the bar. The case was then placed on the stove, and heat applied gradually. When full heat had been applied by means of the stove, the flame of the blowpipe was turned on, and the heat carried up until the gold fairly danced around the joints. The heat was reduced, the case cooled off in the same gradual manner. On removing it from the investment, all sharp corners in the metal structure were now rounded off.

Close's body finely ground was mixed with a fluid consisting of two parts distilled water and one part alcohol, to a pasty consistency, and applied to the bridge. The case was jarred consid-

erably to bring the water in the mixture to the surface, where it was dried off by means of napkins. The cusps were added and sulci carved to full contour, with a view to contouring the case as completely as possible at the first baking. This was done by means of spatulas, excavators, and suitable sable brushes. The case was thoroughly dried over an alcohol lamp before inserting in the electric furnace. It was necessary to fuse the case twice. Upon removal from the furnace the second time it went to its place on the model without any difficulty whatever. Articulation was found to be as perfect as it was possible to get it, the doctor being so fortunate in estimating the shrinkage that it was not necessary to even apply a sandpaper disk to the case.

BY DR. L. K. STEWART, CHICAGO.

No. 29. Patient, Dr. Chas. F. Bryant. Showing two gold seamless crowns on the lower second and third molars. Roots filled with chloro-percha and pulp chamber with Fellowship alloy. Also exhibited a method from beginning to finish of making seamless crowns. Dr. Stewart furnished some practical points in his clinic.

BY DR. C. E. BENTLEY, CHICAGO.

No. 32. In absence of a patient was compelled to demonstrate it on a skull. Every effort was made to secure a patient during the three days.

BY DR. W. H. TAGGART, CHICAGO.

No. 34. A process for drying root canals. A copper wire, No. 14 gauge, three and one-half inches long, is tapered so as to enter the root to the end, and the free end is brought out of the mouth and bent in any direction so as not to touch other parts of the tooth, cheeks nor lips; and this free end is then heated by holding an alcohol lamp or small gas flame in contact with it. This gives a continually increasing heat and is perfectly under control. The minutest canals can be thoroughly desiccated, as the point is put into the canal while cold and the heat applied afterward. It is best to have different sized points, five or six, so as to have the canal full of metal, as this secures a more rapid conduction of heat to the wall of the canal.

BY DR. B. J. CIGRAND, CHICAGO.

No. 35. Patient, Mr. J. Hynes, presenting a broken superior right central, the other natural teeth being a case of arrested or

interrupted development. Dr. Cigrand set a Logan crown on the prepared root, and so ground down the surfaces of the Logan as to perfectly match the natural denture. The peculiar notched surfaces with sunken lines and irregular depressions were produced into the Logan by grinding down the artificial crown at points corresponding with the natural. Dr. Cigrand then demonstrated his method of setting an intradental band, setting the Logan with cement and gutta-percha or chloro-percha.

BY DR. E. H. ANGLE, ST. LOUIS, MO.

No. 38. Showed set of models for diagnosing orthodontia cases.

BY DR. J. Y. CUMMINS, METROPOLIS, ILL.

No. 41. Patient, W. E. Tennant, Fennimore, Wis. Gold filling in left superior central incisor, compound mesio-occlusal cavity.

The filling was made of Rowan's extra pliable decimal gold rolls, assorted.

BY DR. CHARLES C. CHITTENDEN, MADISON, WIS.

No. 42. Patient, Dr. A. H. Brown, of Belvidere; anterior proximal and crown compound cavity of left upper first bicuspid. Gold filling with matrix; proximal cavity filled two-thirds with Ney's soft foil, No. 3; balance of cavity completed with same gold annealed.

The cavity was thoroughly prepared, well inserted and beautifully finished.

BY DR. LEVETT E. CUSTER, DAYTON, OHIO.

No. 43. Patient. Demonstrated the construction of a porcelain crown whereby all the advantages of a band are obtained without any show of metal. A U shaped platinum collar encircles the lingual portion of the root, and this is soldered with Ames' solder to a thin cap of platinum which is then burnished down to the labial portion, the root which has previously received a sharp bevel. A Logan crown is then fitted to the completed platinum cap, and the two united with finely ground Close body.

BY DR. C. P. DORN, NAPERVILLE, ILL.

No. 45. Setting Logan crown with gold band. Dr. Dorn was unable to secure a patient, so demonstrated the method by model, which is as follows:

Take wire measure and drive into fine rosewood; cut wire and make band fit to wood model, and fit to root; burnish band to collar of root; cement band and crown.

BY DR. A. F. JAMES, OAK PARK, ILL.

No. 48. Immediate regulation. Dr. James' method did not impress your committee as one that many would follow.

BY DR. S. W. LAKIN, EUREKA, ILL.

No. 49. Patient, Mrs. Bates, Chicago. The restoration of the lower third of a superior left central incisor, using the screw system and Watts' crystal gold, packing gold with nonserrated instruments. This was a very large operation and had the appearance, when finished, of a substantial operation.

BY DR. EDMUND NOYES, CHICAGO.

No. 50. The restoration of mesial angle in left central incisor with platinized gold, for Dr. C. A. Kitchen, of Rockford. This operation was most thoroughly done, and it is the opinion of the committee that it will do service for many years and still be in good shape.

BY DR. G. D. SITHERWOOD, BLOOMINGTON, ILL.

No. 51. In no branch of the dental art has more mechanical skill been shown than in bridge work, yet one is shocked at the gold-crowned, gold-shod appliances daily exhibited in the front row of an otherwise beautiful denture. No one ever saw an artificial eye made of gold, nor yet a golden nose. On the contrary, every effort is put forth in restoring eyes, ears, noses or hair to copy nature as closely as possible. Yet teeth are constantly restored to their original contour with gold, gold, gold. The man who wants to induct you into the mysteries of the seamless gold crown is everywhere present. Gold is a beautiful metal easily worked and suitable in many ways for restoring the natural teeth when they are broken and decayed, but give it its proper place—*the lingual surfaces only.* For the labial and buccal surfaces use porcelain, which will possess the merit of longer wear than gold, may be easily repaired, and have the beautiful color and polish of the natural teeth.

In the so-called all porcelain bridges—which in truth are platinum, iridium, gold and porcelain, platinum being used for the root bands and caps, and saddles, and platinum iridium for the pins

and cross bars and soldered with platinized gold, the porcelain being of either the low or high fusing body. Such a bridge many operators prefer to set with gutta-percha, so in case of breaking it may be easily removed for repair. In the bridge which I present for a clinic, the root of the right superior central incisor and the left superior cuspid are capped and used as the abutments for two dummies, viz., the left superior central and lateral incisors. No. 28 gauge platinum was used for the two bands or caps and No. 16, square platinum iridium wire for the root pins with the same kind of wire for the support bar. For the cuspid an ordinary plain tooth was soldered to the root wire and cap with a short piece of the same platinum-iridium wire projecting horizontally on the side next the lateral. For the two centrals and lateral the Mason backings and facings were used. The metal instead of being gold in these backings, however, is a white metal which Mr. Mason calls matinum.

It is hard and readily unites with 20 k. solder. You will notice there is a dovetailed groove in the backings, in which a platinum backing or wire on the porcelain facing exactly fits. The backings are fastened in the groove with either gutta-percha or phosphate cement, the preference being given to gutta-percha. In case of accident a new backing may be procured and readily slipped in its place, as the platinum back piece and the groove are of the same size. For artistic appearance, permanency in use, and adaptability in many ways, I have selected these backings for this clinic. I do not say they are the best, but they have proven the most satisfactory in my hands of all the methods I have tried up to this time. They may be used in case it is desirable to fasten an artificial lateral to a central. The central can be devitalized, a pin inserted in the root canal, to which one of the backings may be soldered, and when the central is backed up with gold, and all completed with the labial portion intact, suppose the porcelain back becomes fractured, a new front is readily procured and placed in position without removing the bridge. One principle that insures great strength of these backings is the stout platinum wire running longitudinally on the back of the porcelain. This short paper has been written as an earnest plea for more artistic skill in bridge work, and that our sense of the beautiful and useful shall not be constantly offended by the shining gold knobs in the faces we meet.

For preparing roots for crowning there is no remedy with

which I am acquainted that produces such satisfactory results as trichloracetic acid. Where it is necessary to trim overhanging pieces of abnormal growths or where the gums overlap the roots apply the trichloracetic acid full strength with just enough water to dissolve the crystals ; saturate a small pledget of cotton and apply to the portion of gum you wish to remove ; use caution that only the portion directly around the root is touched. The acid will lessen the pain very materially and will stop the hæmorrhage and form an eschar that protects and hastens the healing of the gums. The escharotic property of the acid in many other cases is very great.

BY DR. I. C. ST. JOHN, MINNEAPOLIS.

No. 53. Patient, Dr. Baker. Restoration of mesio-incisal angle of left upper central, involving one-third of labial and lingual wall. Depending for incisal anchorage on an accessory dovetailed cavity in lingual wall in the incisal third. The cavo-surface angles of the incisal step were widely beveled in order to bind the labial and lingual walls well together with the condensed gold. Twenty-two grains of gold were required to restore the contour.

Dr. St. John labored under the serious disadvantage of being ill, yet he pluckily performed the operation and proved himself a skillful operator.

BY DR. T. W. BROPHY, CHICAGO.

No. 56. Patient, Michael Lewis, of Le Mars, Iowa, age forty; persistent facial neuralgia of both sides for period of fifteen years or more. Feeble-minded from birth. Vocal powers very much impaired. Speech practically nil. Pain the worst early in the morning. Operation consisted of vertical incision of an inch and a half over ramus of jaw through soft tissues to bone then by use of periosteotome the bone was laid bare in middle third of ramus to the sigmoid notch, and by use of burs in engine a groove was cut from the sigmoid notch downward three-fourths inch; through this opening a tenaculum inserted, and the nerve raised; then by traction on the nerve, the upper portion was severed a short distance from the Gasserian ganglion, then by traction from (patient etherized) above downward, the nerve trunk was severed about opposite the second molar tooth. Then from within the mouth an incision was made over the infraorbital foramen and

the nerve grasped and stretched. And the branches leading to the cheek were stretched and dissected out, then by traction upon main trunk it was severed at least an inch and a half back, on the floor of the orbit from its egress at the infraorbital foramen. Second case. Girl of nine years. Case of fibroma of right inferior maxilla reaching from (chloroform used) angle of jaw to central incisor.

BY DR. GEO. T. CARPENTER, CHICAGO.

No. 57. Method of reproducing gum tissue. Irritate the gum with metal band to stimulate granulations and protect the parts with rubber hood so as to allow granulations to organize.

The metallic bands and rubber hoods are retained with silk ligatures and the parts are examined about once a week and stimulated with a solution of nitrate of silver ʒi or ʒii to the ounce of water. With time and patience good results can be obtained.

BY. DR. J. AUSTIN DUNN, CHICAGO.

No. 58. How to make large compound amalgam fillings with perfect contour, contact and interdental space without previous separation.

Patient, Dr. F. S. Buckley, cavity; right lower first bicuspid, disto-occlusal cavity.

The principal feature of this method is, after filling the cavity the hand matrix is removed and more amalgam added; the cavity is then packed flush and full over against the approximating tooth; as the amalgam hardens the teeth can be wedged more or less apart. At a subsequent sitting a thin saw is passed through, and the finishing completed in the usual way, using a separator if necessary.

BY DR. D. M. GALLIE, CHICAGO.

No. 59. Patient, Mr. Schlosser, student in Chicago College of Dental Surgery.

Operation, compound proximal cavity, extending through tooth both distal and mesial cavities, large, pulp alive, filled with moss fiber crystal gold, finished, with twenty foil. Time of operation, two hours and twenty minutes.

The finished operation was a beautiful piece of work and displayed the skill of the operator to perfection.

DR. H. J. GOSLEE, CHICAGO.

No. 60. Dr. Goslee demonstrated his method of carving cusps for crown and bridge work.

DR. W. F. GREEN, EVANSTON, ILL.

No. 61. Patient, female, adult. This is a case where the four anterior superior teeth had been extracted for cosmetic reasons. For the past four and one-half years she has worn a porcelain faced gold bridge, sustained by a crown on left superior second bicuspid and bands on the two cuspids. The left superior first bicuspid and molar is missing. This is not an ideal case for the display of art, owing to the protruding superior maxilla, and the almost unlimited motion of the lower jaw.

A removable porcelain bridge was contemplated, but could not be used as the cuspids could not be paralleled, their axes crossing each other almost like the letter X, so a stationary bridge was constructed. The cuspids which were decapitated by the bands were prepared, as also the second bicuspid, and platinum caps with posts were fitted and a platinum saddle swaged to fit, extending from right cuspid to left superior second molar, setting over caps and pins. A piece of No. 16 iridio-platinum wire was bent to fit, and resting on the three caps. This was attached in the mesial line to the saddle. Facings were ground up and soldered to wire, using ten per cent platinum solder throughout.

BY DR. H. ALFRED GUNTHER, CHICAGO.

No. 62. Patient. A secure and expeditious method of obtaining anchorage or starting a filling by the use of crystalloid gold.

Six (6) models were presented, illustrating as many different cavities and short and concise methods for obtaining anchorage in each case. Stress was laid on the fact to cut the gold into strips sufficiently large so that when folded they would entirely cover the bottom of the cavity. As the gold *spreads laterally* wedging begins at once.

It was not advocated to use this gold entirely throughout the filling, but only at the beginning of the operation, finishing with cohesive gold.

A comparatively easy and novel method was also presented for taking a plaster cast of the hand in infancy, the model shown being that of a girl thirteen (13) days old.

BY DR. J. E. KEEFE.

No. 63. Replanting for cure of pyorrhœa. Patient, Mrs. Robertson. The left upper central incisor was very loose. It had been under treatment for two months, but did not improve. The pulp was alive and the tooth set back of the arch. It was sore to the touch and very annoying. The tooth was extracted by Dr. Pagin and dropped into a saline solution of seven and one-half grains of salt into a quart of water. On examination some deposits were found near the end of the root. Absorption had begun at the apex. The deposits were removed, and the end of the root made smooth. The tooth was then drilled into and the pulp removed. The canal was filled with chloro-percha. The socket was then syringed out with the saline solution, and upon examination it was found that the process had all absorbed to the end of the root.

The tooth was then bathed in oil of cloves for a few minutes and put in the socket. A little pressure brought the tooth out in line with the other teeth. The rubber dam was then slipped over the teeth, and a previously made retaining appliance was cemented on the teeth to be left there four months.

All instruments used in this operation were sterilized.

Dr. Keefe also removed a retaining appliance from some teeth he replanted in January at a clinic given by the Chicago Dental Society. These teeth, which were very loose at the time of operation, were quite firm when bands were removed. The gums were healthy, and there has been no discharge.

BY DR. E. A. ROYCE, CHICAGO.

No. 64. Patient, Mr. John Press. Mesio-occlusal cavity first left superior molar; started cavity with Ney's absolutely noncohesive foil, No. 4, rolled into ropes then into cylinders; then partially filled cavity with Watts' crystal strips and Pack's cylinders, cohesive, with hand pressure; then finished with Globe beaten foil, No. 40, using Bonwill mechanical mallet, No. 2, modified by Dr. Royce. Time of putting in gold, thirty-six minutes. Part of the gold was put in with the mallet running at a speed of 5,000 blows a minute and finished at 10,000 blows a minute. It was very beautiful; the margins are perfect.

Dr. Royce shows the advantage of having the slip joint attached back instead of in front of the flexible cable, which is quite an advantage.

BY DR. G. A. THOMAS, CHICAGO.

No. 65. Continuous gum, upper, using rubber teeth, thirty-four gauge platinum. Baked body in Custer furnace thirty-five minutes. Finished baking case, enameling same in Peck electric furnace in twenty-six minutes. Case was placed in Custer before material was dry, while in the last baking enamel was quite dry. Material used, consolidated body enamel; plain rubber teeth; color of teeth retained.

BY J. W. WASSALL, CHICAGO.

No. 66. Patient. Pyorrhœa alveolaris of lower right central. Tooth loose; a flow of pus upon pressure over root, soft tissues tumefied. Considerable deposit of salivary calculus and signs of neglect in personal care of teeth pointed to local rather than constitutional origin in this case. The pocket deposits were removed with Dr. C. S. Case's pyorrhœa instruments, which in delicacy of form and general adaptability to the roots are most effective. Resorcin was used for disinfectant and lactic acid to promote union. The patient was carefully instructed as to future care of the parts.

BY DR. J. S. BRIDGES, CHICAGO.

No. 67. Patient. A bridge is shown, placed in position a year and a half, made with open face crown attachment. The method of procedure is as follows: A double compound cavity is prepared, an impression made in gutta-percha, a die run up from Melotte's metal. Gold foil is burnished upon this, removed and invested. Clasp gold is sweated upon this. After polishing the bridge is assembled in the usual manner.

BY DR. R. H. KIMBALL, CHICAGO.

No. 69. Patient, Dr. W. A. Johnston, Peoria, Ill. Large mesio-occlusal cavity first inferior right molar, immediate separation. Perry separator, foil, Ney's soft and cohesive foil.

The operation was thoroughly performed throughout, and made beautiful filling when finished.

BY DR. A. M. MARKLE, CHICAGO.

No. 70. Dr. Markle showed some very interesting models of regulating, showing skiagraphs for diagnosis. Four teeth were located in one position. Several other cases of X ray work.

BY DR. J. H. WOOLLEY, CHICAGO.

No. 71. Patient, Marian Orr, 478 S. Forty-third Avenue; fifteen years; good health.

Combination of oxyphosphate and noncohesive gold as a temporary filling. Object, noncohesive gold filled on cervical border protects the latter during the test of temporary filling from decay.

The following named were on the programme to give clinics but in some cases there were not suitable cases and in others the apparatus was not in good order. All of the undermentioned had good reasons for not giving a clinic:

Drs. Henry L. Whipple, of Quincy, Ill.; J. M. Sprinkle, Nokomis, Ill.; E. F. Hazell, Springfield; H. B. Farmer, E. St. Louis; K. B. Davis, Springfield; A. W. Chenowith, Atlanta; J. Campbell, Bloomington; J. E. Aigley, Farmington; Prof. Fuchs, J. N. Crouse, Chicago; J. C. Widenham, Jacksonville, R. G. Richter, Milwaukee, Wis.; R. M. Pearce, Rock Island; Grafton Munroe, Springfield; J. E. Cravens, Indianapolis, Ind.; and F. H. Berry, of Milwaukee, Wis.

The growth of interest in our annual clinics caused our society to decide on making clinics the special feature of the meeting in Chicago this year.

A list of seventy-one clinics was secured. A greater number than ever before attempted by our State society. Committee on clinics: L. W. Skidmore, Moline; F. B. Noyes, Chicago; E. R. Carpenter, Chicago.

JUNE 5.—And now as I have completed, as near as possible, my report of the clinics, I am made sad by the news of the death of Dr. I. C. St. John, of Minneapolis, Minn., who was with us just three weeks ago, and gave us a difficult and exacting clinic in spite of feeling ill at that time. None of us, though, I am sure, even thought he was so near his end. I feel I cannot close this report without mention of his untimely end, and all the members of our society I am sure will feel a deep sense of loss in the death of Dr. St. John, and our sympathy will be extended to his associates, family and friends with whom he was more intimately associated.

Dr. St. John died at the home of his parents at Winona, Minn., Saturday morning, June 3.

APPENDIX.

LIST OF OFFICERS

. . OF THE . .

ILLINOIS STATE DENTAL SOCIETY,

FROM DATE OF ORGANIZATION.

ORGANIZED AT CHICAGO, JULY 24, 1865.

CHAIRMAN, A. C. VAN SANT, PRINCETON. SECRETARY, E. HONSINGER, CHICAGO.

Ann'l meeting.	Year.	Place.	President.	Vice-President.	Secretary.	Treasurer.	Librarian.
1	1865[1]	Chicago.....1st.	A. C. Van Sant..Princeton.	E. Honsinger ...Chicago.	Edgar Park.....Chicago.	S. Babcock...Springfield.	T. N. Truesdell.....Elgin.
2	1866	Chicago.....2d.	H. N. Lewis.....Quincy.	O. Willson.....Aurora.	G. T. Smith...Princeton.	M. W. Sherwood.Chicago.	L. P. Haskell.....Chicago.
3	1867	Chicago.....3d.	Geo. H. Cushing...Chicago.	A. W. French.Springfield	M. S. Dean.....Chicago.	J. N. Crouse..Mt. Carroll.	W. W. Allport.....Chicago.
4	1868	Springfield.1st.	E. H. Kilbourne....Aurora.	G. P. Kingsley..Freeport.	H. J. Smith.....Quincy.	A. W. French..Springfield	M. S. Dean.....Chicago.
5	1869	Quincy.....1st.	M. S. Dean.....Chicago.	G. V. Black..Jacksonville.	C. S. Smith...Springfield.	A. W. French..Springfield	C. O. Dean..Mount Carroll.
6	1870	Bloomingt'n 1st	M. S. Dean[2].....Chicago.	G. V. Black[2].Jacksonville	C. S. Smith[2]..Springfield.	A. W. French[2] Springfield	C. O. Dean[2].Mount Carroll.
7	1871[3]	Peoria.....1st.	G. V. Black ..Jacksonville.	S. C. Wilson.Bloomington	C. S. Smith...Springfield.	G. P. Kingsley..Freeport.	E. C. Stone.....Galesburg.
8	1872	Chicago....4th.	O. Willson..... ...Aurora	J. N. Crouse.....Chicago.	C. S. Smith...Springfield.	G. P. Kingsley..Freeport.	J. M. Hurtt.....Peoria.
9	1873	Rock Island 1st	J. N. Crouse.....Chicago.	S. L. Edwards ...Peoria.	C. R. E. Koch....Chicago.	S. M. Sturgiss....Quincy.	J. M. Hurtt.....Peoria.
10	1874	Jacksonville 1st	C. Stoddard Smith.Spri'g'd	E. Honsinger....Chicago.	C. R. E. Koch....Chicago.	S. M. Sturgiss....Quincy.	R. Matthews.....Pontiac.
11	1875	Ottawa .....1st.	G. S. Miles.....Jerseyville.	E. D. Swain.....Chicago.	C. R. E. Koch....Chicago.	C. A. Kitchen.....Galva.	F. W. Dean.....Pekin.
12	1876	Galesburg..1st.	E. D. Swain.....Chicago.	K. B. Davis, Petersburg.	C. R. E. Koch....Chicago.	C. A. Kitchen..Rockford.	O. Willson.....Aurora.
13	1877	Springfield..2d.	K. B. Davis ....Springfield.	E. C. Stone....Galesburg.	E. D. Swain.....Chicago.	C. A. Kitchen..Rockford.	E. B. David.....Aledo.
14	1878	Rockford...1st.	C. R. E. Koch.....Chicago.	S. M. Sturgiss....Quincy.	E. D. Swain.....Chicago.	C. A. Kitchen..Rockford.	E. B. David.....Aledo.
15	1879	Peoria.....2d.	S. M. Sturgiss.....Quincy.	C. A. Kitchen, Rockford.	Edmund Noyes..Chicago.	E. C. Stone....Galesburg.	W. W. Ormsbee....Geneva.
16	1880	Bloomington 2d	C. A. Kitchen....Rockford.	J. Frank Mariner, Ottawa	Edmund Noyes..Chicago.	E. C. Stone....Galesburg.	G. H. Harrington..Delavan.
17	1881	Rock Island 2d	J. Frank Mariner..Ottawa.	J. A. W. Davis. Galesburg	Edmund Noyes..Chicago.	E. C. Stone....Galesburg.	G. H. Harrington..Delavan.
18	1882	Quincy.....2d.	A. W. Harlan.....Chicago.	W. T. Magill, Rock Island	Edmund Noyes..Chicago.	E. C. Stone....Galesburg.	H. H. Townsend...Pontiac.
19	1883	Decatur.....1st.	E. C. Stone.....Galesburg.	J. J. R. Patrick, Belleville	Edmund Noyes..Chicago.	E. S. Talbot.....Chicago.	H. H. Townsend...Pontiac.
20	1884	Springfield..3d.	Edmund Noyes....Chicago.	H. H. Townsend, Pontiac	J. W. Wassall[4]..Chicago.	J. Campbell..Blooming'n	W. B. Woodward....Peoria.
21	1885	Peoria.....3d.	H. H. Townsend...Pontiac.	M. H. Patten, Springfield	J. W. Wassall[5]..Chicago.	C. R. Dwight....Danville.	J. W. Cormany..Mt. Carroll.
22	1886	Rock Island 3d.	T. L. Gilmer.....Quincy.	W. B. Woodward, Peoria.	J. W. Wassall[6]..Chicago.	C. B. Rohland.....Alton.	W. B. Ames.....Chicago.
23	1887	Jacksonville.2d	W. T. Magill..Rock Island.	C. B. Rohland.....Alton.	J. W. Wassall[7]..Chicago.	T. W. Prichett.Whitehall	W. B. Ames.....Chicago.
24	1888	Cairo.....1st.	C. B. Rohland.....Alton.	Chas. Henry, Jackson'lle.	Garrett Newkirk.Chicago	T. W. Prichett.Whitehall	W. B. Ames.....Chicago.
25	1889	Quincy.....3d.	Geo. H. Cushing...Chicago.	J. J. Jennelle.....Cairo.	Garrett Newkirk.Chicago	T. W. Prichett.Whitehall	W. B. Ames.....Chicago.
26	1890	Springfield.4th.	T. W. Prichett..Whitehall.	Kate C. Moody, Mendota.	Garrett Newkirk.Chicago	W. A. Stevens...Chicago.	D. M. Cattell.....Chicago.
27	1891	Bloomington 3d	Truman W. Brophy.Chicago	E. K. Blair.....Waverly.	Garrett Newkirk.Chicago	W. A. Stevens...Chicago.	F. H. McIntosh..Bloom'g'n
28	1892	Springfield.5th.	W. H. Taggart...Freeport.	Garrett Newkirk.Chicago	Louis Ottofy.....Chicago.	W. A. Stevens...Chicago.	F. H. McIntosh..Bloom'g'n

[1] Two meetings were held in Chicago, July and November; all succeeding meetings were held in May.
[2] These officers held over from the previous meeting, no election being held at the close of meeting of 1869.
[3] The officers acting at this and succeeding meetings were elected and installed at the close of the previous meeting.

[4] Assistant Secretary, W. H. Taggart, Freeport.
[5] Assistant Secretary, P. J. Kester, Chicago.
[6] Assistant Secretary, P. J. Kester, Chicago.
[7] Assistant Secretary, Louis Ottofy, Chicago.

LIST OF OFFICERS OF THE ILLINOIS STATE DENTAL SOCIETY.—CONTINUED.

Ann'l meeting.	Year.	Place.	President.	Vice-President.	Secretary.	Treasurer.	Librarian.
29	1893	Rock Isl'd..4th	E. K. Blair.....Waverly.	C. N. Johnson...Chicago.	Louis Ottofy....Chicago.	W. A. Stevens...Chicago.	F. H. McIntosh, Bloom'g'n
30	1894	Springfield..6th	Garrett Newkirk..Chicago.	J.W.Cormany.Mt.Carroll	Louis Ottofy....Chicago.	W. A. Stevens...Chicago.	F. H. McIntosh, Bloom'g'n
31	1895	Galesburg ...2d	J. W. Cormany.Mt. Carroll.	S. F. Duncan.....Joliet.	Louis Ottofy....Chicago.	W. A. Stevens...Chicago.	Grafton Munroe, Spring'ld
32	1896	Springfield..7th	W. A. Stevens ...Chicago.	C. R. Taylor....Streator.	Louis Ottofy....Chicago.	E. D Swain ....Chicago.	J. R. Rayburn...Fairbury.
33	1897	Peoria 4th	C. R. Taylor.....Streator.	E. B. David.....Aledo.	Louis Ottofy....Chicago.	E. D. Swain ....Chicago.	J. R. Rayburn...Fairbury.
34	1898	Springfield .8th	J. A. W. Davis..Galesburg.	W. A. Johnston...Peoria.	A. H. Peck.....Chicago.	E. D. Swain.....Chicago.	Grafton Munroe.Spring'ld
35	1899	Chicago.....5th	Chas. P. Pruyn...Chicago.	A S. Waltz.....Decatur.	A. H. Peck.....Chicago.	E. D. Swain.....Chicago.	G. A. McMillen.....Alton.
36	1900	Springfield.9th	R. N. Laurance..Lincoln.	J. Campbell..Bloom'g'n	A. H. Peck.....Chicago.	C. N. Johnson..Chicago.	H. A. Potts..Bloomington.
37	1901						
38	1902						
39	1903						
40	1904						
41	1905						
42	1906						
43	1907						
44	1908						
45	1909						
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62	1926						
63	1927						
64	1928						
65	1929						
66	1930						
67	1931						
68	1932						
69	1933						

OFFICERS AND STANDING COMMITTEES.

OFFICERS, 1899–1900.

President, R. N. LAURANCE.....Lincoln.
Vice President, J. CAMPBELL.....Bloomington.
Secretary, A. H. PECK.....Chicago.
Treasurer, C. N. JOHNSON.....Chicago.
Librarian, H. A. POTTS.....Bloomington.

EXECUTIVE COUNCIL, 1899–1900.

Ex Officio.....
- R. N. LAURANCE, Lincoln.
- A. H. PECK, Chicago.
- C. N. JOHNSON, Chicago.

Terms expire 1900.....
- GEO. H. CUSHING, Burbank, Cal.
- A. S. WALTZ, Decatur.
- E. H. ALLEN, Freeport.

Terms expire 1901.....
- J. CAMPBELL, Bloomington.
- E. K. BLAIR, Waverly.
- S. A. CAMPBELL, Mattoon.

Terms expire 1902.....
- T. W. PRITCHETT, Whitehall.
- W. A. JOHNSTON, Peoria.
- D. M. GALLIE, Chicago.

STANDING COMMITTEES.

EXECUTIVE COMMITTEE.

E. H. ALLEN.....Freeport.

COMMITTEE ON PUBLICATION.

A. H. PECK, Chairman.....Chicago.
E. NOYES.....Chicago.
C. N. JOHNSON.....Chicago.

BOARD OF EXAMINERS.

ROBERT GOEBEL (term expires 1900).....Lincoln.
C. M. ROBBINS (term expires 1901).....Carthage.
C. C. CORBETT (term expires 1902).....Edwardsville.

COMMITTEE ON DENTAL SCIENCE AND LITERATURE.

A. W. HARLAN.....Chicago.

COMMITTEE ON DENTAL ART AND INVENTION.

H. J. GOSLEE.....Chicago.

COMMITTEE ON INFRACTION OF THE CODE OF ETHICS.

C. B. POWELL.....Jacksonville.
F. H. MCINTOSH.....Bloomington.
M. R. HARNED.....Rockford.

CLINICS.

J. E. HINKINS, Supervisor.....Chicago.
B. D. WIKOFF, } Assistants. { .....Chicago.
E. F. HAZELL, } { .....Springfield.

LOCAL COMMITTEE OF ARRANGEMENTS.

G. H. HENDERSON, Chairman.....Springfield.
O. L. FRAZEE, } Assistants .....Springfield.
E. F. HAZELL, }

CONSTITUTION AND BY-LAWS.

ARTICLE I.

Name.

This Society shall be called "The Illinois State Dental Society."

ARTICLE II.

Aims and Objects.

Its aims and objects are as follows: The elevation of the standard of professional education; the advancement and cultivation of dental science and literature, and the protection of the public from the evils of empiricism; the promotion of the honor, usefulness and interest of the dental profession and mutual fellowship and good feeling.

ARTICLE III.

Officers.

The officers of this Society shall consist of a President, Vice President, Secretary, Treasurer and Librarian, and such others as may be designated in the by-laws or standing resolutions.

ARTICLE IV.

Executive Council.

The management of this Society shall be vested in an Executive Council consisting of twelve active members of whom the President, Secretary and Treasurer shall constitute a part, and these shall be the officers of the Council.

ARTICLE V.

Duties of Executive Council—Election of President and Vice President. Appointment of all Other Officers, and Selecting Place of Next Meeting.

The Executive Council shall have exclusive control of all the business of the Society and their action shall be final, without review by the Society, except as otherwise provided.

At the morning session of the last day of the annual meeting the Society shall proceed to elect a President and Vice President by ballot. The first ballot shall be informal, and in no case shall a ballot be dispensed with.

The Council shall appoint or elect all other officers, and standing committees, and shall select the place of annual meeting. In case of the absence from the meeting of the President and Vice President or of any other officers, the Council shall appoint others to act in their places.

ARTICLE VI.

Election of Executive Council.

At the first election of the Executive Council held under the amended constitution, nine members shall be elected, who shall serve—three for one year—three for two years—and three for three years—their terms to be decided by lot after their election. At each subsequent annual meeting three members of the Council shall be elected by the Society to serve for three years.

ARTICLE VII.

Quorum.

Seven members of the Executive Council shall be necessary to constitute a quorum. If at any annual meeting a quorum should fail to be present, the members of the Council present shall appoint enough members of the Society to constitute with themselves a quorum, who shall serve until the arrival of the regular members of the Council.

ARTICLE VIII.

Members.

Section 1.—This Society shall consist of Active, Corresponding and Honorary Members.

Active Members.

Sec. 2.—The Active members shall consist of practitioners of dentistry residing in the State of Illinois (except as provided in Section 5, Article VII, of the By-Laws). They shall be twenty-one years of age, of good moral character, and shall have received a diploma from a respectable Medical or Dental College, or shall have been engaged three years in the practice of dentistry, including term of pupilage, and shall have passed a satisfactory examination before the Board of Examiners.

Corresponding Members.

Sec. 3.—Corresponding Members shall consist of practitioners of dentistry or medicine residing in this or other States of the Union, or in foreign countries, who manifest a disposition to advance the science and art of the profession by contributing to its literature.

Honorary Members.

Sec. 4.—Honorary Members shall consist of persons who have made valuable contributions to the science or art of dentistry, or have rendered important services to the profession.

ARTICLE IX.

Powers.

The Society shall use one common seal, with such device and inscription as it shall agree upon; and may, by vote of the Council, grant to its members such certificates as may authenticate their membership.

ARTICLE X.

Amendments.

The Constitution may be altered or amended, with the consent of two-thirds of the members of the Society present—the proposition stating the amendment (in writing) to be submitted by five members at an annual meeting and to lie over until the next annual meeting.

If the purpose and scope of such alterations or amendments be announced in writing at the annual meeting, or, if a general revision is desired to be made, and the society, or its executive council, shall appoint a committee to determine the details of such amendments, or to make such revision, the publication in the "Transactions" of such changes as are proposed to be made, or of such revised constitution, shall be deemed a sufficient compliance with the requirements of this section, and such proposed alterations, amendments, or revision, may be adopted or rejected at the next annual meeting thereafter.

BY-LAWS.

ARTICLE I.

OFFICERS.

Duties of the President

Section 1.—The President shall preside at all meetings of the Society and Council, call special meetings of the Society at the request of ten active members, and of the Council at the request of three of its members; sign all diplomas, certificates, or letters testimonial; appoint all committees not otherwise provided for, and be *ex officio* a member of all standing committees.

Duties of the Vice President.

Sec. 2.—The Vice President shall, in the absence of the President, preside; and in case of the absence of both of these officers, a President *pro tempore*, shall be appointed by the Council.

Duties of the Secretary.

Sec. 3.—The Secretary shall keep minutes of all meetings, both of the Council and Society; notify officers and members of their election; give notice to members of all meetings; sign all diplomas, certificates and letters testimonial; receive all moneys due the Society from its members, and pay the same to the Treasurer, and certify to all official acts of the Society in connection with the President. He shall take charge of and conduct the correspondence of the Society, and shall keep a copy of all official letters he may write, with replies to the same. He shall be Chairman of the Publication Committee, and shall give a bond in amount as required by the Executive Council before entering upon his duties.

Duties of the Treasurer.

Sec. 4.—It shall be the duty of the Treasurer to keep all moneys of the Society committed to his trust; to pay them over by order of the President, countersigned by the Secretary, and keep a correct account of the same in a book pro-

vided for that purpose. He shall make a full and detailed report of the financial affairs of the Society at the annual meeting each year; and at the expiration of his term of office, he shall deliver to his successor all funds, papers and books relating thereto, and shall give bond in amount as required by the Executive Council before entering upon his duties.

Duties of the Librarian.

Sec. 5.—The Librarian shall have charge of all books and manuscripts belonging to the Society. He shall keep an accurate catalogue of the same, and shall report at the annual meeting the condition of the Library, and contributions made to it during the year.

Publication Committee.

Sec. 6.—The President shall appoint annually, after the election of officers, two members of the Society, who shall act in conjunction with the Secretary, as the Publication Committee.

They shall be authorized to employ a competent reporter to furnish an accurate report of the proceedings of each meeting.

They shall superintend the publication and distribution of such portions of the Transactions as the Council may direct, or the committee judge to be of sufficient value, and shall have full authority and power to cut down, amend or leave out such matter as they deem best for the proper preparation of the Transactions for publication.

They shall specify, in their annual report, the character and cost of the publications of the Society during the year, and the number of copies still on hand. Any report or other paper entitled to publication in the volume of the Transactions for the year in which it shall be presented to the Society must be placed in the hands of the Publication Committee on or before the last day of the annual meeting, and must be also so prepared that the proof sheets furnished the authors shall be returned without material alteration or addition.

Every paper received by this Society, and all plates and other means of illustration, shall be considered the exclusive property of the Society, and shall be published for its benefit.

Disclaimer.

This committee is hereby instructed to print, at the beginning of each volume of the Transactions, the following disclaimer, *viz.*; "The Illinois State Dental Society, although formally accepting and publishing the reports of the various committees, and the essays read before it, holds itself wholly irresponsible for the opinions, theories, or criticisms therein contained, except when otherwise decided by special resolution."

ARTICLE II.

Election of the Executive Council.

At the election held first after the adoption of this amended Constitution, nine persons shall be chosen by the Society for members of the Executive Council, to serve for terms of one, two and three years respectively, or until their successors are duly qualified, and thereafter three members shall be elected annually to serve three years.

They shall be nominated with special reference to their fitness by a committee of three, to be appointed by the President, and only confirmed by a two-thirds affirmative vote of the members of the Society present.

The election of new members of the Council annually shall be held on the morning of the last day's session, but those newly elected shall only enter upon their duties after the close of the annual meeting at which they were elected.

ARTICLE III.

Duties of Executive Council.

The Executive Council shall have the absolute control of the entire business of the Society—and shall sit with closed doors.

How Business Shall be Brought Before the Council.

Any member of the Society desiring to bring any matter of business before the Council must do so in writing, and may appear before them to advocate any such measure by consent of the Council.

Whom They Shall Elect and Appoint.

They shall annually elect a Secretary, Treasurer and Librarian and appoint the Executive Committee, one member of the Board of Examiners, a Committee of three on Ethics, a Supervisor of Clinics, the Committee on Dental Science and Literature, the Committee on Dental Art and Invention and a Local Committee of Arrangements.

Officers and Members of Old Committees to Hold Over.

The officers of the Society and the members of the Executive Committee, of the Board of Examiners and of the Committee on Dental Science and Literature and of Dental Art and Invention who are in office at the time this constitution goes into effect shall continue in office till their full terms expire.

Auditing Committee.

The Executive Council shall annually appoint an Auditing Committee from their own number.

How Moneys Shall be Voted.

They shall vote no moneys to be paid for other than the legitimate expenses of the Society except upon a three-fourths vote of all the members of the Council present.

Presiding Officer not to Vote Except in Case of a Tie.

The presiding officer of the Council shall not vote on any question, except in case of a tie, when he shall cast the deciding vote.

ARTICLE IV.

Executive Committee, and Duties of same.

There shall be an Executive Committee of one to be appointed by the Executive Council annually, whose duty shall be to provide a suitable hall for meetings and prepare the program of scientific work and order of business for each annual session, and attend to such other business as the Council may direct.

ARTICLE V.

Duties of Board of Examiners.

The Board of Examiners shall satisfy themselves by examination, or in any other manner they may think necessary, of the reputable character and professional qualifications of all candidates for membership, and recommend for election such as they find to be worthy.

ARTICLE VI

Vacancies in the Board of Examiners.

In case of the absence from any meeting of one or more members of the Board of Examiners, the Council shall appoint substitutes to act *pro tempore*, and in case of a vacancy, occurring by death or otherwise, they shall, at the earliest time practicable thereafter, appoint some member to fill the unexpired term of such vacating member.

ARTICLE VII.

Election of Members.

Section 1.—Candidates for membership must be proposed to the Board of Examiners, recommendations for the same being made in writing by two members of the Society, accompanied by the initiation fee, said fee being returnable to the applicant in case of rejection. The Board shall proceed to examine such candidates in accordance with the provisions of Article V. of these By-Laws, as early thereafter as practicable. Three-fourths of all the votes cast by the Council shall be necessary for the election of a member.

Sec. 2.—No person shall be entitled to the privileges of active membership until he shall have signed the Constitution and paid the initiation fees and dues. If he omit the same for one year his election shall be void.

Sec. 3.—No person having once been a member of this Society who has forfeited his membership by the nonpayment of his dues, shall be eligible to reëlection until the amount due from him at the time he was dropped be paid.

The names of all candidates recommended by the Board of Examiners for active membership shall be posted conspicuously in the room where the Society meets, and shall not be voted on until the daily session of the Council next following the posting.

Any member of the Society knowing of any reason why a candidate for membership should be rejected, shall notify the Board of Examiners and the Council through its presiding officer, in writing of such reasons.

Any candidate for membership who has once been voted upon and rejected, shall not have his name proposed again until the next annual meeting.

Corresponding and Honorary Members—How Elected.

Sec. 4.—The names of candidates for Corresponding or Honorary membership shall be presented to the Board of Examiners only upon the recommendation of ten active members.

The Board shall recommend them for election only after satisfying themselves that they have the qualifications provided for in Secs. 3 and 4, Article VIII.

of the Constitution ; and such names shall upon no occasion be presented to the Council, except by the Board of Examiners, who shall, in reporting names for Corresponding or Honorary membership, state what work the candidates have done entitling them to be so presented.

If any Corresponding member shall enter upon the practice of dentistry in this State, his corresponding membership shall thereupon cease.

Active Members Removing from the State.

Sec 5.—Active members removed from the State may retain their membership by notifying the Secretary of their desire to be placed upon a list of non-resident members, and by regularly paying an annual fee of one dollar. Those having lost their membership by removal, if still in reputable practice, may be elected non-resident members.

ARTICLE VIII.

Initiation Fee and Annual Dues.

Section 1.—The initiation fee shall be five dollars. The annual dues shall be five dollars, payable in advance, on the morning of the first day's session of the annual meeting. No member shall be entitled to the privileges of the floor until his dues are paid. Any member who neglects to pay his annual dues two successive years, shall cease to be a member without action of the Society, *provided* the Secretary has notified him of his indebtedness.

What Members are or may be Exempt from Dues.

Corresponding and Honorary members shall be exempt from the payment of all dues; and as a mark of honor for distinguished services in the profession, by special action of the Society, the dues of an active member may be remitted. An active member having paid annual dues for twenty-five consecutive years, shall be constituted a life member, and shall be exempt from payment of dues.

ARTICLE IX.

Duties and Privileges of Members.

Section 1.—An active member shall not accept a student for a less period than three years, and shall require each student to give a written obligation to graduate at some regularly organized dental college before he assumes the responsibilities of a dental practitioner.

Sec 2.—Active members shall be entitled to debate and vote on all questions discussed in the Society, and eligible to any office in its gift, provided their dues are fully paid.

Sec. 3.—Corresponding and Honorary members shall be entitled to a seat in meetings of the Society, and have the privilege of debating all questions of a professional or scientific character.

ARTICLE X.

Resignation or Expulsion of Members.

Section 1.—Any member shall have leave to resign (except in cases of impeachment), upon application made therefor in writing; *provided* all arrears due from him to the Society have been discharged.

SEC. 2.—Any member may be impeached by three members, for violating the laws of this Society, for malpractice, or other gross misconduct. All charges shall be made in writing with specifications, clearly setting forth each violation of the code of ethics governing this body. The member so impeached shall have transmitted to him a written copy of the impeachment, with notice of the time of hearing, before a committee of five members appointed for that purpose; then if the report of said committee sustain such impeachment, the Council, at the next regular meeting, may, by ballot, suspend or expel such member, by a majority of three-fourths of all the votes cast.

COMMITTEE ON ETHICS.

SEC. 3.—There shall be appointed annually, by the Executive Council, a Committee on Ethics, to consist of three members, to whom all complaints shall be submitted, and through whom alone shall cases of infractions of the code be brought before the Council.

ARTICLE XI.

No member shall speak on any question unless his dues are paid, and until his name has been announced by the presiding officer, nor shall any one speak more than twice upon one subject, nor to exceed fifteen minutes in all, unless by affirmative vote of the Society.

ARTICLE XII.

ANNUAL MEETINGS.

SECTION 1.—The annual meeting shall be held in May, commencing on the second Tuesday at 10 o'clock A. M., and shall be devoted to the reading and discussion of papers and such other business as shall relate to the interests of the profession, concluding with the election of officers during the last daily session. Ten active members shall be necessary to constitute a quorum for the transaction of business at any meeting of this Society.

The Executive Council shall meet at 9 o'clock A. M., preceding the meeting of the Society, and shall hold a session before each daily session of the Society if necessary. They may be called together at any time during the year by the President, upon the request of three members of the Council.

SEC. 2.—None but members of this Society shall be present during elections; *provided* an active member of the Society calls for the enforcement of this section.

SEC. 3.—It shall be the duty of the Society at each regular meeting, to appoint one of its members to deliver an address at the next regular meeting.

ARTICLE XIII.

ALTERATIONS OR AMENDMENTS.

SECTION 1.—These By-Laws may be altered or amended at any regular meeting by a vote of two-thirds of the members of the Society present, *provided* said alteration or amendment shall have been presented at a previous meeting.

If the purpose and scope of such alterations or amendments be announced in writing at the annual meeting, or, if a general revision is desired to be made, and

the society, or its executive council, shall appoint a committee to determine the details of such amendments, or to make such revision, the publication in the "Transactions" of such changes as are proposed to be made, or of such revised By-Laws, shall be deemed a sufficient compliance with the requirements of this section, and such proposed alterations, amendments, or revision, may be adopted or rejected at the next annual meeting thereafter.

ARTICLE XIV.

Rules of Order.

Robert's Rules of Order shall be the Code of this Society.

ARTICLE XV.

This Constitution shall go into effect immediately upon its adoption, and it shall be the duty of the presiding officer at once to appoint a Nominating Committee, as provided in Article II. of the By-Laws, and said committee shall as soon thereafter as possible present the names of the Executive Council, and the vote be then immediately taken.

STANDING RESOLUTIONS.

Supervisor of Clinics.

Resolved, That a Supervisor of Clinics shall be appointed annually by the Executive Council to serve one year.

The duties of such Supervisor shall be to make all arrangements for the holding of clinics, to have charge of the clinic rooms, fixtures, etc., and to determine who may or may not operate, what operations shall be performed, etc., etc. He shall keep a record of all operations in a book provided for that purpose, and shall report to the Society annually at the second daily session after the holding of the clinics.

His report shall contain as thorough a criticism of each operation as possible, setting forth all the steps he may have deemed incorrect or otherwise, a statement of what he would have thought a better method, and his reasons therefor—to the end that profitable and instructive discussion may follow. He shall also report, as far as possible, the condition of operations made at the clinics of previous years.

He may appoint one or more assistants, as may be required.

He shall notify each clinical operator to supply himself with all needed instruments and appliances for the proper performance of his operations, and request him to select for himself an assistant.

Alternates shall also be selected and notified.

Resolved, That in the future the Supervisor of Clinics confine his invitations for clinicians to the active, nonresident, corresponding and honorary members of the Society, but also may invite reputable nonresident practitioners who are not members of the Society.

Duties of Librarian.

Resolved, That after this date (May 1885), it shall be the duty of the Librarian to obtain cabinet photographs, so far as possible, of all the members of this Society deceased. and likewise of the present members, and to properly arrange the

same in suitable albums to be procured by him; and the photographs of future members shall be added to the collection.

The Librarian shall be the custodian of these albums, and shall bring them to each annual meeting for the inspection of the members.

Resolved, That the following Committees be created:

COMMITTEE ON DENTAL SCIENCE AND LITERATURE.

First, a Committee consisting of one member on Dental Science and Literature, whose duty it shall be to report annually, on the first day of the annual meeting, on the progress of science and literature as appertaining to dentistry and give a resumé of all that may be new and important.

COMMITTEE ON DENTAL ART AND INVENTION.

Second, a Committee consisting of one member on Dental Art and Invention, whose duty shall be to report on the first day of each annual meeting, the advance made during the year in the arts and inventions appertaining to dentistry. This Committee shall exhibit the new devices and methods pertaining to the practice of dentistry, which are brought before the Society, in a room specially provided for that purpose.

The member of this committee shall be selected with reference to his special fitness for those duties, and be appointed by the Council.

The term of office shall be one year.

DISTRIBUTION OF TRANSACTIONS.

Resolved, That the official transactions shall not be supplied to members in arrears for annual dues; but it shall be the duty of the Secretary to notify all delinquents of this action previous to the publication of the transactions.

Resolved, That the members of the Publication Committee shall have the power to make such arrangements as in their judgment they deem proper looking toward the publication of the transactions for the succeeding year.

CODE OF ETHICS.

ARTICLE I.

SECTION 1. The dentist should be ever ready to respond to the reasonable wants of his patrons, and should fully recognize the obligations involved in his duties toward them. As, in many cases, they are unable to comprehend the operation or service performed, or to correctly estimate its value, the practitioner must be guided by his own sense of right, in treating the case as his superior knowledge dictates. His manner should be gentle and sympathetic, and yet sufficiently firm to enable him to secure the best results of his skill. He should gain the confidence of his patrons, not alone by the skillful performance of difficult operations, but also by attending carefully and conscientiously to the simpler cases committed to his care.

SEC. 2. The dentist, without being obtrusive or pedantic, should impart such information to his patrons as his opportunities afford him in regard to the causes and nature of the disease in the teeth, or adjacent parts, which he may be called upon to treat; and should explain to them the importance of availing them-

selves of such timely preventives or remedies as he may deem necessary to their welfare. He should also communicate such general information as shall enable them to exercise an intelligent appreciation of what the profession aims to accomplish.

SEC. 3. The dentist shall be temperate in all things, keeping both mind and body in the best possible health, that his patients may have the benefit of that clearness of judgment and skill which they have a right to expect.

ARTICLE II.

SECTION 1. Every member of the dental profession is bound, as such, to maintain the honor and integrity of the profession. To this end, he should himself be upright and courteous in his intercourse with the public and his brethren in the profession.

SEC. 2. It is unprofessional to resort to public advertisements, such as cards, handbills, posters or signs calling attention to peculiar styles of work, prices for services, special modes of operating, or to claim superiority over neighboring practitioners; to publish reports of cases, or certificates in the public prints; to go from house to house soliciting or performing operations; to circulate or recommend nostrums, or to perform any other similar acts. But nothing in this section shall be so construed as to imply that it is unprofessional for dentists to announce in the public prints, or by card, simply their names, occupation, and place of business; or in the same manner to announce their removal, absence from, or return to business; or to issue, to their patients appointment cards, with a fee bill for professional services thereon.

SEC. 3. The dentist, when applied to, for merely advice or temporary relief, by the patient of a reputable practitioner, whose services at that time he is unable to procure, should guard against disparaging the family dentist by hints, inquiries, or any other means calculated to weaken the patient's confidence in him. At the same time the dentist should not, from too high a sense of professional courtesy to his neighboring practitioner, allow the interests of persons so applying for counsel or service, to be jeopardized.

SEC. 4 And it shall be regarded as unprofessional to warrant operations or work as an inducement to patronage.

ACTIVE MEMBERS, 1899.

Name.	Address.	Elected.
Adams, W. J.	Knoxville	1897
Aigley, J. E.	Farmington	1897
Allen, E. H.*	Freeport	1883
Ames, W. V-B.*	34 Washington St., Chicago	1884
Antes, R. H.,* *Life Member*	Geneseo	1873
Baker, Hester J.	Quincy	1894
Bandy, O. L.*	LaSalle	1898
Barber, H. B.*	Naperville, Ill	1899
Barcus, J. M.*	Carlinville	1889
Barnett, H. K.*	Upper Alton	1896
Bennington, E. K.	55 53d St., Chicago	1899
Bentley, C. E.*	100 State St., Chicago.	1895
Black, G. V.,* *Life Member*	146 Franklin St. Chicago	1898
Blair, E. K.*	Waverly	1887
Bridges, J. S.*	92 State St., Chicago	1898
Brigham, E. T.	Watseka,	1889
Brophy, T. W.*	126 State St., Chicago	1876
Brown, A. E.*	1911 Michigan Ave., Chicago	1882
Brown, Frank N.*	100 State St., Chicago	1899
Brown, J. B.	Bloomington	1892
Brown, J. O.*	100 State St., Chicago	1899
Brunson, G. M.*	Joliet	1897
Bull, H. B.*	Fairbury	1892
Campbell, J.*	Bloomington	1875
Campbell, S. A.*	Mattoon	1886
Carey, A. B.*	Pittsfield	1898
Carey, G. B.*	Perry	1897
Carpenter, E. R.*	18 Van Buren St., Chicago	1895
Carpenter, Geo. T.*	103 State St., Chicago	1897
Case, C. S.*	92 State St., Chicago	1894
Cattell, D. M.*	92 State St., Chicago	1889
Chappell, O. A.*	Elgin, Ill	1899
Chenoweth, A. W.*	Atlanta	1897
Cigrand, B. J.*	475 West North Ave., Chicago	1893
Cigrand, P. J.*	718 South Halsted St., Chicago	1896
Clark, A. B.*	34 Washington St., Chicago	1876
Clark, W. G.*	Lakota Hotel, Chicago	1899
Clusman, L.*	360 Blue Island Ave., Chicago	1892
Colhamer, Chas. E.*	Peoria	1897

*Present.

Name.	Address.	Elected.
Collins, J. W.*	Lincoln	1883
Condon, A. P.	Springfield	1898
Conkey, F. M.	Homer	1895
Cook, Geo. W.*	47th and Kenwood Ave., Chicago	1894
Corbett, C. C.*	Edwardsville	1892
Cormany, J. W.*	Mt. Carroll	1878
Corwin, J.	737 W. Madison Street, Chicago	1895
Coulson, D. E.	Galesburg	1890
Crawford, S. W.	108 Washington Ave., Chicago	1897
Crissman, Ira B.*	92 State St., Chicago	1890
Crouse, J. N.* *Life Member*	2231 Prairie Ave., Chicago	1865
Cruise, Robert J.*	1560 Jackson Boul., Chicago	1899
Cummins, J. T.*	Metropolis City	1888
Curry, J. A.	Streator	1892
Curtis, W. W.	34 Washington St., Chicago	1897
Cushing, G. H., *Life Member*	Burbank, Colo.	1865
David, E. B.,* *Life Member*	Aledo	1873
David, G. L.*	Aledo	1896
Davis, J, A. W.* *Life Member*	Galesburg	1872
Davis, K. B., *Life Member*	Springfield	1869
Davis, L. L.*	103 State St., Chicago	1885
Davis, T. A.*	Warsaw, Ill	1899
Daymude, O. M.*	Monmouth	1893
Dennis, G. J	257 31st St., Chicago	1890
Devlin, J. B.*	2204 Michigan Ave., Chicago	1897
Dicus, J. B.*	70 State St., Chicago	1898
Dillon, E. H.	Elmwood	1897
Dillon, G. B.	Sterling	1886
Dorn, C. P.*	Naperville	1880
Duncan, E.*	Jacksonville	1877
Duncan, S. F.*	Joliet	1881
Dunn, J. Austin*	31 Washington St., Chicago	1887
Dunn, J. Elwood*	100 State St., Chicago	1899
Edmonds, N. D.	100 State St., Chicago	1898
Edwards, L. A.*	257 31st St., Chicago	1899
Eiles, F. Stanley	Blue Island	1893
Elmer, A. J.*	Rochelle, Ill	1899
Entsminger, G. W	Carbondale	1888
Erringer, J. W.*	728 47th St., Chicago	1899
Farmer, H. B.	East St. Louis	1898
Fernandez, E. M. S.*	34 Washington St., Chicago	1899
Fischer, Vincent	570 Blue Island Ave., Chicago	1892
Fouser, J. K.*	Joliet, Ill	1899
Fowler, W. F.*	126 State St., Chicago	1899
Frazee, O. L.*	Springfield	1897

*Present.

Name.	Address.	Elected.
Freeman, A. B.*	34 Washington St., Chicago	1889
Freeman, D. B., *Life Member*	92 State St., Chicago	1872
Fuqua, Victor H.,*	92 State St., Chicago	1899
Gallie, Don M.*	100 State St., Chicago	1894
Gardiner, F. H.*	31 Washington St., Chicago	1877
Gilmer, A. L.	Quincy	1895
Gilmer, Thos. L.,* *Life Member*	31 Washington St., Chicago	1872
Girling, Winthrop.*	31 Washington St., Chicago	1899
Gluesing, J. W.*	Moline	1893
Goebel, Robert.*	Lincoln	1884
Good, Robert*	126 State St., Chicago	1898
Gordon, Byron	Moline	1893
Goslee, H. J.*	Madison St. and Ogden Ave., Chicago	1897
Green, W. F.	South Evanston	1892
Griffin, E. B.	East St. Louis	1897
Guffin, E. L., *Life Member* (*vote* 1889)	Geneseo	1882
Gunther, H. Alfred*	3300 Cottage Grove Ave., Chicago	1892
Hancock, J. E.	126 State St., Chicago	1897
Hanaford, M. L.*	Rockford	1878
Hare, D. A.	163 State St., Chicago	1898
Hargett, Arthur V.*	34 Washington St., Chicago	1899
Harlan, A. W.,* *Life Member*	Masonic Temple, Chicago	1872
Harlan, Paul H.,*	144 Oakwood Blvd., Chicago	1899
Harned, M. R.*	Rockford	1898
Harper, W. E.*	3441 Wabash Ave., Chicago	1893
Harris, A. J.*	279 Warren Ave., Chicago	1886
Hayes, H. H.*	92 State St., Chicago	1899
Hazell, E. F.	Springfield	1898
Hebert, A. W.*	31 Washington St., Chicago	1894
Henderson, G. H.*	Springfield	1896
Henry, T. F.*	Streator	1896
Herbert, Frank Y.	Ottawa	1897
Hewes, C. T.	Quincy	1896
Hinkins, J. E.*	131 53d St., Chicago	1888
Hodgman, C. W.*	Princeton	1897
Holland, W. E.*	Jerseyville	1889
Honsinger, E.,* *Life Member*	318 Park Ave., Chicago	1865
Hoover, W. A.	Gibson City	1897
Houston, J. T.	Peoria	1897
Hunn, R. G.	Springfield	1898
Hurlbut, C. H.*	100 State St., Chicago	1899
James, Austin F.*	Oak Park	1895
James, P. R.	Ottawa	1897
Johnson, C. N.*	31 Washington St., Chicago	1886
Johnson, I. B.,*	Onarga	1898

*Present.

Name.	Address.	Elected.
Johnston, W. A.*	Peoria	1891
Kane, J. K	Pinckneyville	1896
Kasbeer, J. W	Normal	1897
Keefe, J. E.*	34 Washington St., Chicago	1888
Kester, P. J.*	126 State St., Chicago	1881
Kimball, R. H.*	34 Washington St., Chicago	1898
Kitchen, C. A.,* *Life Member*	Rockford	1865
Koch, C. R. E., *Life Member*	213 31st St., Chicago	1867
Lakin, S. W.*	Eureka	1895
Lamoreux, J. M	Galesburg	1895
Lane, F. A	Macomb	1898
Laurance, R. N.*	Lincoln	1879
Laurence, P. I	175 Dearborn St., Chicago	1899
Leake, C. W.*	2454 Indiana Ave., Chicago	1894
Lickly, J. J	Morris	1897
Logan, W. H. G.*	785 Winthrop Ave., Chicago	1899
Lombard, F. S.*	Elgin, Ill	1899
Lowry, F. M	Delavan	1897
Lumpkin, I. A	Mattoon	1886
Magill, W. T., *Life Member*	Rock Island	1871
Magnisson, J. E	Orion	1897
Maguire, J. R	Lewistown	1897
Mariner, J. Frank,* *Life Member*	31 Washington St., Chicago	1872
Markle, A. M.*	96 State St., Chicago	1898
Marshall, J. S	34 Washington St., Chicago	1883
Martin, B. F.*	70 State St., Chicago	1899
Martin, W. C	Peoria	1881
Matteson, A. E.,* *Life Member*	3700 Cottage Grove Ave., Chicago	1869
Matteson, C. F.,* *Life Member*	50 35th St., Chicago	1871
MaWhinney, Elgin*	100 State St., Chicago	1899
Merriman, C. J.	92 State St., Chicago	1891
Miller, G. A	346 E. 63d St., Chicago	1898
Moorhead, W. W	Aledo	1895
Munroe, Grafton	Springfield	1890
McCandless, A. W.*	126 State St., Chicago	1892
McDaniel, J. A	Princeton	1897
McDonough, Martin L	Winchester	1897
McIntosh, F. H.*	Bloomington	1884
McLean, F. R	Danville	1897
McLemore, W. Y.*	Mason City, Ill	1899
McMillan, H. W	Roseville	1897
McMillen, Geo. A	Alton	1891
McMillen, J. D	Macomb	1897
Menges, Theo.*	146 Franklin St., Chicago	1899
Montag, C. F.*	Blue Island	1899

*Present.

Name.	Address.	Elected.
Morey, A. E.*	31 Washington St., Chicago	1899
Morrow, W. J.*	Bushnell	1898
Nevius, L. W	92 State St., Chicago	1899
Newcomer, A. I.*	Beardstown	1898
Newsome, B.*	Minonk	1894
Nicol, J. D.*	Peoria	1898
Noyes, Edmund,* *Life Member*	92 State St., Chicago	1872
Noyes, F. B.*	92 State St., Chicago	1895
Nyman, J. E*	34 Washington St., Chicago	1895
Ormsbee, W. W., *Life Member*	Geneva	1865
Ottofy, Louis	Yokohama, Japan	1881
Overholser, W. A.*	Milledgeville	1897
Paine, R. M.*	869 N. Clark St., Chicago	1899
Paine, F. A.*	739 Larrabee St., Chicago	1899
Palmer, John V.*	92 State St., Chicago	1899
Patterson, F. J.*	Mendota	1896
Pearce, R. M	Rock Island	1891
Peck, A. H.*	92 State St., Chicago	1890
Perry, Geo. B.*	100 State St., Chicago	1899
Peters, C. F	Peoria	1897
Peters, E. H	Peoria	1897
Pfeifer, Josephine D.*	Masonic Temple, Chicago	1894
Porter, C. A.	Eureka	1897
Potter, Samuel H	Dwight	1897
Potts, H. A.*	Bloomington	1897
Powell, C. B.*	Jacksonville	1894
Pritchett, T. W.*	White Hall	1877
Prothero, J. H	146 Franklin St., Chicago	1896
Pruyn, C. P.*	100 State St., Chicago	1876
Pyper, P. A	Pontiac	1898
Rayburn, J. R.*	Fairbury	1890
Reed, J. J	Rockford	1896
Reed, L. A.*	Scott Bl'k, Jacksonville, Ill	1899
Reese, C. N	1006 E. Garfield Blvd., Chicago	1898
Reeves, W. T*	100 State St., Chicago	1899
Reid, J. G.*	126 State St., Chicago	1882
Reid, J. H	Bloomington	1897
Ried, J. D	Pana	1898
Roach, F. E.*	126 State St., Chicago	1899
Robbins, E. M	Carthage	1882
Roberts, N. J	Waukegan	1886
Rogers, A. W.*	103 State St., Chicago	1899
Rohland, C. B.,* *Life Member*	Alton	1874
Royce, E. A	721 Washington Boul., Chicago	1886
Rue, A. W.*	Alton	1897

*Present.

Name.	Address.	Elected.
Sackett, H. R.*	92 State St., Chicago	1899
Salomon, G. S	Masonic Temple, Chicago	1885
Salter, G. B., *Life Member*	31 Washington St., Chicago	1871
Sawyer, C. B.*	Jacksonville	1887
Schermerhorn, W. W.*	Jacksonville	1898
Schuhmann, H. H	103 State St., Chicago	1892
Schwartz, G. W.*	34 Washington St., Chicago	1898
Shedd, J. W.*	Pontiac	1897
Simmons, W. H.*	Shelbyville, Ill	1899
Sitherwood, G. D.*	Bloomington	1880
Skidmore, L. W.*	Moline	1891
Slonaker, J. W.*	100 State St., Chicago	1899
Smith, Arthur G	Peoria	1896
Smith, C. F	Masonic Temple, Chicago	1898
Smith, F. L.*	1044 Jackson Boul., Chicago	1899
Smith, Geo. E	Byron	1897
Smyser, J. H.*	70 State St., Chicago	1898
Sprinkle, J. M	Nokomis	1893
Stafford, F. H	490 W. Madison St., Chicago	1896
Stevens, W. A.*	2361 Wabash Ave., Chicago	1876
Stewart, E. H*	Joliet	1890
Stewart, L. K.*	103 State St., Chicago	1897
Stone, E. C.,* *Life Member*	Galesburg	1866
Swain, Edgar D.,* *Life Member*	Seneca Falls, N. Y	1867
Taggart, W. H.*	Masonic Temple, Chicago	1880
Taylor, C. R.*	Streator	1880
Temmeman, F. R*	Prophetstown	1899
Thayer, C. H	92 State St., Chicago	1885
Thomas, Geo. A.*	126 State St., Chicago	1897
Thompson, C. N	3017 Michigan Ave., Chicago	1894
Thompson, Florence E.*	Masonic Temple, Chicago	1896
Tibbets, C. J	Quincy	1882
Tobey, W. W.*	Danville	1889
Trompen, C. N	Roseland	1892
Vigneron, Eugene*	Central Music Hall, Chicago	1899
Waltz, A. S.*	Decatur	1877
Ware, H. A.*	204 Cass St., Chicago	1899
Warner, Claude B.*	Avon	1899
Warren, G. E.*	Pontiac	1895
Wassall, J. W.*	92 State St., Chicago	1882
Watson, A.*	Galesburg	1896
Webb, G. D	Wilmington	1896
Wellman, H. W.*	Quincy	1896
West, C. H.*	Farina	1899
West, J. E.*	Geneseo	1899

*Present.

Name.	Address.	Elected.
Whipple, Henry L.*	Quincy	1896
Whitefield, Geo. W.*	Evanston	1899
Widenham, J. C	Jacksonville	1874
Wikoff, B. D.*	Masonic Temple, Chicago	1888
Williams, L. M	144 Oakwood Boul., Chicago	1897
Wilson, Orville W	Carrollton	1897
Wolf, H. M.*	Kewanee	1895
Wonderly, T. G	Galena	1881
Woolley, J. H.*	100 State St., Chicago	1877
Yorker, F. V.*	48 43d St., Chicago	1892
Zinn, Frank H.*	100 State St., Chicago	1899

Total, 277. Number present, 187.

NONRESIDENT MEMBERS.

Christmann, Geo. A	Cliff House, Manitou, Colo†	1881
Kraus, Maurice	1 Singer Strasse 10, Vienna, Austria	1895
LeCron, D. O. M	Union Trust Building, St. Louis, Mo.	1892
Newkirk, Garrett*	California	1899
Timerman, E. C	1169 Broadway, Oakland, Cal	1896
Warner, E. R.*	California Bldg., Denver, Colo	1882
York E. Lawley	Berlin, Germany	1899

Total, 7. Number present, 2.

CORRESPONDING MEMBERS.

Anderson, Eli W	15½ E. Washington St., Indianapolis, Ind.	1887
Baldwin, C. V	Los Angeles, Cal	1885
Barrett, W. C	208 Franklin St., Buffalo, N. Y	1881
Blomley, F. W.*	Sioux Falls, S. Dak	1899
Bowman, G. A	2602 Locust St., St. Louis, Mo	1881
Bronson, Geo. A	3201 Washington Ave., St. Louis, Mo	1881
Cochran, R. L	Burlington, Iowa	1885
Cunningham, Geo	2 King's Parade, Cambridge, England	1888
Custer, Levitt E.*	Dayton, Ohio	1896
French, D. Gale	Pittsburg, Pa	1881
Fuller, A. H.*	Columbia Building, St. Louis, Mo	1880
Grevers, J. E	13 Oude Turf Markt, Amsterdam, Holland	1888

*Present.

†Chicago address, 507 La Salle Avenue.

Name.	Address.	Elected.
Harper, John G	800 Pine St., St. Louis, Mo	1892
Hughes, E. E	Des Moines, Iowa	1885
Hurtt, J. M	Pomona, Cal	1890
Kennerly, J. H	Grand and Franklin Aves., St. Louis, Mo	1897
Levett, M. M	10 Boul. des Capucines, Paris, France	1888
Moody, J. D	Los Angeles, Cal	1894
Moody, Kate C	Los Angeles, Cal	1894
Morrison, John B	9 When Block, Indianapolis, Ind	1882
Patrick, Geo	Bolton, England	1890
Reed, J. W	Butte City, Mont	1883
Stutenroth, C. W	Watertown, S. Dak	1884
Sylvester, A. H	2 Sommer Strasse, Berlin, Germany	1888
Templeton, J. G	Pittsburg, Pa	1881
Tomes, Charles S	39 Cavendish Square, London, England	1888
VanMarter, J. G	Tacoma, Wash	1888
Walker, J	22 Grosvenor St., London, England	1888

Total, 28. Number present, 3.

HONORARY MEMBERS.

Brewer, F. A	San Francisco, Cal	1869
Butler, C. R	Cleveland, Ohio	1874
Chase, H. S	910 Olive St., St. Louis, Mo	1869
Chittenden, C. C.*	Madison, Wis	1872
Crowley, C. Geo	1358 Lexington Ave., New York City	1885
Hardtner, J. (deceased)	Springfield, Ill	1877
Miller, W. D	46 Voss Strasse, Berlin, Germany	1885
Morrison, James B	1422 Baltimore Ave., Kansas City, Mo	1869
McKellops, H. J.*	3548 Lindell Ave., St. Louis, Mo	1868
Porre, R. J	278 Race St., Cincinnati, Ohio	1868
Rathbun, R. S	Clinton, Iowa	1872
Smith, Gilman T	Princeton, Ill	1899
Taft, J	Elm and Shillito Ave., Cincinnati, Ohio	1874
Wilson, I. P	Burlington, Iowa	1874

Total, 12. Number present, 2.

ROLL OF HONOR.

SPECIALLY HONORED BY THE SOCIETY.

Black, G. V.*	1889	Cushing, Geo. H	1889

RESUME.

	Total.	Present.
Active Members in Illinois (except Chicago,) *Life 10*.....	150	85
Chicago, *Life 14*.....	126	100
Nonresident Members.....	7	2
Corresponding Members.....	28	3
Honorary Members.....	12	2
	324	192

MINUTES

OF THE

ILLINOIS STATE DENTAL SOCIETY.

MEETING OF 1899.

Thirty-fifth annual meeting held in Chicago, May 9–12.

Morning session of first day was called to order by the President, Dr. Chas. P. Pruyn, in the 5 o'clock dining room of the Palmer House, at 11 o'clock.

Dr. E. D. Swain was called to the chair, and the President then read the annual address of the Society.

The chair announced that all visiting members of the profession are cordially invited to participate in the discussions.

Discussion of the President's address was opened by Dr. C. E. Bentley, and was continued by Drs. A. W. Harlan, J. H. Smyser, J. A. Watling (of Ann Arbor, Mich.), E. J. Perry and G. M. Brunson.

Dr. A. W. Harlan, Committee on Dental Science and Literature, read his annual report. It was discussed by Drs. J. G. Reid, C. M. Bailey (Minneapolis, Minn.), Edmond Noyes, P. J. Kester, C. R. Taylor, Garrett Newkirk, E. MaWhinney, G. D. Sitherwood and G. V. Black. The discussion was closed by Dr. A. W. Harlan.

On motion, the Society adjourned to meet at 2:30 P. M.

Afternoon session was called to order by the President, Dr. Chas. P. Pruyn, at 3:15 o'clock.

Minutes of previous session were read and approved.

Dr. J. E. Keefe, Committee on Art and Invention, read his annual report.

On motion, by Dr. T. W. Brophy, the President and Secretary were instructed to transmit to Dr. Geo. H. Cushing, of Burbank, Cal., a message appropriate to the occasion, he, Dr. Cushing, being absent from the Society the second time since its organization.

Dr. Geo. W. Cook read his paper. Subject: "Bacteriological Investigation of Pulp Gangrene."

The discussion was opened by Dr. A. H. Peck, and continued by Dr. G. V. Black. The essayist closed the discussion.

Dr. J. N. Crouse spoke of the present status of the Protective Association.

Dr. A. W. Harlan moved that it be the sense of this Association that the individual members should assist Dr. Crouse in a financial way in connection with the Protective Association.

The motion was supported. The matter was discussed by Drs A. B. Clark, J. G. Reid, J. H. Woolley, C. N. Johnson, C. R. Taylor, E. H. Allen, Edmond Noyes, I. B. Crissman, E. J. Perry, T. F. Henry, J. E. Hinkins, G. D. Sitherwood and P. J. Kester.

The motion was amended by Dr. J. N. Crouse to the effect that the Society send circular letters, stating the present status of the association, to all dentists not members of said association in the United States.

The amendment being accepted, the original motion as amended was carried.

On motion, the Society adjourned to meet in the lecture hall of the Northwestern University Dental School, at 2:30 P. M. Wednesday.

WEDNESDAY—MAY 10.

Afternoon session was called to order by the President at 3 o'clock.

Minutes of the previous session were read and approved.

The President then introduced four charter members of the Society, Drs. J. N. Crouse, E. Honsinger, C. A. Kitchen, and G. T. Smith, who were received with cheers.

The Secretary then made the following announcements:

That the Executive Council recommends that the sum of $200 be contributed to the State Board of Dental Examiners to assist in the passage of the proposed new State law.

On motion, the recommendation was adopted.

That Dr. E. J. Perry, of Chicago, had been reinstated to active membership, also the election of Dr. F. W. Blomley, of Sioux Falls, S. D., to corresponding membership.

The Secretary read the report of the Committee on Necrology, as to the death of Dr. A. W. Freeman, of Chicago.

On motion, the report was adopted.

Dr. F. B. Noyes then read his paper. Subject: The "Structure of the Enamel with Reference to Cleavage and the Lines and Angles of Cavity Margins."

The discussion was opened by Dr. E. H. Allen, and was continued by Drs. G. V. Black, C. N. Johnson, G. W. Cook, A. W. Harlan and J. N. Crouse.

On motion, the discussion was closed by the essayist.

On motion, the Society adjourned to meet in the lecture hall of the Chicago College of Dental Surgery, Thursday, May 11, at 10 A. M.

THURSDAY—MAY 11.

The Society was called to order by the President, Dr. Chas P. Pruyn, at 10 A. M. On motion, the Society adjourned to meet at 2:30 P. M. in the lecture hall.

Thursday P. M. session was called to order by the President at 3:30.

Minutes of the previous session were read and approved.

Election of officers by Council.

The following resolution was referred by the Executive Council to the Society for action.

RESOLUTIONS ON COLLEGES.

WHEREAS, It having come to the notice of this Society that the Wisconsin State Board of Dental Examiners have refused to issue licenses upon the diplomas issued by the Chicago College of Dental Surgery and Northwestern University Dental School to the graduating classes of 1898-99 as they have heretofore done, basing such refusal on the ground that the said schools were not recommended to the said board by a certain organization known as the National Board of Dental Examiners; and,

WHEREAS, Said National Board of Dental Examiners is simply a voluntary organization clothed with no legal authority nor standing, having little or no knowledge of the work done and accomplished in the reputable dental schools and colleges of the United States; and,

WHEREAS, The National Board of Dental Examiners have placed upon their recommended list of schools and colleges a number of the dental departments of prominent universities, without the knowledge, consent or permission of the officers or faculties of such institutions in order that it might appear that such institutions recognize the authority and direction of said National Board of Dental Examiners in the hope that such board might the more readily persuade other dental schools and colleges to submit to its dictation and control; and,

WHEREAS, Said National Board of Dental Examiners have placed upon their recommended list of schools and colleges any and all such institutions that have expressed a willingness to be controlled and directed by said board; and;

WHEREAS, Said National Board of Dental Examiners have so placed upon their published list of recommended schools and college institutions that have heretofore never been recognized by State boards of examiners, nor by other dental schools and colleges as worthy of recognition, making the sole test for recommendation expressed acquiescence in the rules as are and may be promulgated by said National Board of Dental Examiners, regardless of the actual fitness and qualifications of such schools to properly teach and instruct students in the art and science of dentistry; and,

WHEREAS, The laws of the State of Wisconsin recognize as reputable dental schools and colleges having but two courses of instruction of five months each, while the Chicago College of Dental Surgery and Northwestern University Dental School have, for the past ten years, required of all their students an attendance upon lectures, quizzes, laboratory and clinic work of three terms of six months each; and,

WHEREAS, The Chicago College of Dental Surgery and Northwestern University Dental School, of their own volition made, during the college session of 1897-98, commendable, safe and satisfactory advancements both in length of college term, from six months to seven months in each course, and in raising the standard of scholarship for admission to said schools, requiring an additional year of high school training of students applying for registration, and placing all examinations for the admission of applying students into the hands of county and State superintendents of public instruction, thereby, in these respects, establishing a higher standard than had heretofore been adopted and maintained by a great majority of the dental schools and colleges of the United States; and,

WHEREAS, The Chicago College of Dental Surgery and Northwestern University Dental School are well known to this Society as possessing equipments, facilities and faculties for instructing students in dentistry, and do actually instruct students in dentistry in a manner that is equaled by few, and, as we believe, surpassed by no similar institutions in the United States; therefore, be it

Resolved, That we, the Illinois State Dental Society, in this our thirty-fifth annual session, wish to express our regrets that the State Board of Dental Examiners of Wisconsin has thus unjustifiedly discriminated against the Chicago College of Dental Surgery and the Northwestern University Dental School, and that we, as a society, desire to place on record our endorsement of these two institutions, which have grown up in our State and which have made a national and international record as reputable and advanced institutions of dental learning.

It was moved by Dr. J. W. Cormany that the resolutions be adopted. The motion was supported. The resolutions were discussed by Drs. J. N. Crouse, J. W. Cormany, C. R. Taylor, Theo. Menges, C. N. Johnson and C. E. Bentley.

It was moved by Dr. C. R. Taylor that the resolutions be laid on the table. The motion was supported but failed to carry.

Dr. C. E. Bentley moved the previous question. The motion was supported and carried.

By request the resolutions were reread.

Dr. C. R. Taylor then moved to refer the resolutions back to the Executive Council.

The chair ruled the motion out of order.

The previous question was then voted upon, which resulted in the adoption of the resolutions.

The Secretary read the message that was sent on behalf of the Society to Dr. Geo. H. Cushing.

The message was as follows:

MESSAGE SENT TO DR. CUSHING.

TO DR. GEO. H. CUSHING, Burbank, Cal.

The Illinois State Dental Society assembled in its thirty-fifth annual session at Chicago, the place of its birth, herewith transmits to you its feelings of affection and loyalty for the noble work you did in its organization and for the first thirty-four years of its existence, and deplores the fact that you are not with us in person.

A. H. PECK, *Secretary.* CHAS. P. PRUYN, *President.*

The following message which was received from Dr. Cushing was then read by the Secretary.

MESSAGE FROM DR. CUSHING.

BURBANK, CAL., May 10, 1899.

DR. A. H PECK, Chicago, Ill.

To the Illinois State Dental Society:—Thanks for your kindly message. If I were with you in person as I am in spirit, I should be happy. Hoping you will have a profitable meeting, with love to one and all; yours,

GEO. H. CUSHING.

Dr. T. L. Gilmer spoke of the intention of Dr. E. D. Swain to discontinue the practice of dentistry, and remove from the State, and moved that a committee be appointed to draft suitable resolutions, and that a copy of the same be engrossed and presented to Dr. Swain; also that they be spread upon the minutes.

The Chair appointed as such committee, Drs. T. L. Gilmer, C. N. Johnson and C. E. Bentley.

Following is a copy of the resolutions:

We, the members of the Illinois State Dental Society, wish to take this opportunity of expressing to Dr. Edgar D. Swain our high appreciation of the valuable services rendered by him as an honored member of the dental profession, and particularly as a trusted officer of long standing he Society.

Our associations with him professionally and personally have endeared him to us in no ordinary degree, and we deeply regret the necessity which compels his retirement from practice and his removal from our midst.

We can only beg to send with him our heartfelt thanks for the many favors he has bestowed upon us individually and as a body, and to assure him of our lasting and most affectionate regards.

(Signed) THOS. L. GILMER, C. N. JOHNSON, C. E. BENTLEY, } *Committee.*

Dr. Edmund Noyes spoke of the intention of Dr. Garrett Newkirk to remove to California in the Fall and moved that a committee be appointed to draft suitable resolutions, the same to be engrossed and presented to Dr. Newkirk. The motion was supported and carried.

The President appointed as such committee Drs. Edmund Noyes, A. B. Clark and R. H. Kimball.

RESOLUTION—DR. NEWKIRK.

We, the members of the Illinois State Dental Society, having learned with regret that Dr. Garrett Newkirk is compelled by the failing health of his wife to change his residence to California, desire to express our appreciation of him as an old and honored member of this Society, which he served efficiently as Secretary from 1888 to 1891; Vice President for the year 1892, and President in 1894. Wherefore

Resolved, That we do hereby express our friendship and esteem for him personally, and bear testimony to his worth as a useful and honorable member of this Society and the dental profession.

Resolved, That we heartily commend him to the profession and people of his future place of residence in the full assurance that his personal worth and professional ability will soon become known and appreciated by the community in which he may live.

Resolved, That these resolutions be spread upon the records of the Society and that a copy of the same be engrossed and sent to Dr. Newkirk.

EDMUND NOYES, A. B. CLARKE, R. H. KIMBALL, } *Committee.*

It was moved by Dr. S. F. Duncan that the President appoint a committee to consider the matter of redistricting the State as regards the district societies. The committee to report to the Society at next annual meeting. The Chair appointed as such committee Drs. C. B. Rohland, G. W. Entsminger, S. F. Duncan, I. A. Lumpkin, J. R. Rayburn, C. R. Taylor, J. W. Cormany and E. H. Allen.

Dr. H. J. Goslee then read his paper. Subject: "Modern Manipulative Methods in Crown and Bridge Work." The discussion was opened by Dr. R. N. Laurance, and was continued by Drs. E. J. Perry, J. E. Nyman, B. J. Cigrand and L. O. Green.

On motion, the subject was passed, the essayist closing the discussion.

The committee appointed to make nominations for members of the Executive Council, recommended the names of Drs. T. W. Pritchett, W. A. Johnston and D. M. Gallie.

On motion, they were declared elected.

The President announced the death of Dr. J. E. Hinkins' little child.

On motion, the Secretary was instructed to send a suitable letter of condolence to Dr. Hinkins.

The Secretary announced the election by the Excutive Council of the following officers and committeemen for the ensuing year:

Secretary, A. H. Peck, Chicago; Treasurer, C. N. Johnson, Chicago; Executive Committee, E. H. Allen, Freeport; Committee on Dental Science and Literature, A. W. Harlan, Chicago; Committee on Dental Art and Invention, H. J. Goslee, Chicago; Member Examining Board, C. C. Corbett, Edwardsville; Committee on Ethics: C. B. Powell, Jacksonville; F. H. McIntosh, Bloomington; M. R. Harned, Rockford; Supervisor of Clinics, J. E. Hinkins, Chicago; Assistant, B. D. Wikoff, Chicago, E. F. Hazell, Springfield; Librarian, H. A. Potts, Bloomington; Local Committee of Arrangements: G. H. Henderson, Chairman, Springfield; Assistants, O. L. Frazee, Springfield, E. F. Hazell, Springfield.

Balloting for President and Vice President for the ensuing year resulted in the unanimous election of Dr. R. N. Laurance, of Lincoln, for President, and Dr. J. Campbell, of Bloomington, for Vice President.

On motion, the session adjourned to meet in the infirmary room, where refreshments were to be served.

The adjourned session was called to order by the President at 8:30 o'clock.

On motion, the report of the Supervisor of Clinics was dispensed with.

Dr. W. H. Simmons suggested that members from "out of town" express their appreciation of what the Chicago members have done by way of entertainment for the former. This was done by the "country" members rising to their feet.

Refreshments having been served, the remainder of the evening was pleasantly spent by speech making and music.

The incoming President and Vice President were installed into their respective offices.

The President announced the appointment of Drs. Edmund Noyes and C. N. Johnson as assistants to the Secretary on the Publication Committee.

It was moved by Dr. J. G. Reid that the Association, by a rising vote, express its thanks to the Local Committee of Arrangements.

The motion was supported and carried.

At various times during the meeting the Secretary announced the election to active membership of Drs.

Barber, H. B., Naperville.
Brown, Frank N., 100 State Street, Chicago.
Brown, J. O., 100 State Street, Chicago.
Bennington, E. K., 55 Fifty-third Street, Chicago.
Chappell, O. A., Elgin.
Clark, W. G., Lakota Hotel, Chicago.
Cruise, R. J., 1560 Jackson Boulevard, Chicago.
Davis, T. A., Warsaw.
Dunn, J. E., 100 State Street, Chicago.
Edwards, L. A., 257 Thirty-first Street, Chicago.
Elmer, A. J., Rochelle.
Ewing, J. W., 728 Forty-seventh Street, Chicago.
Fernandez, E. M. S., 34 Washington Street, Chicago.
Fouser, J. R., Joliet.
Fowler, W. F., 126 State Street, Chicago.
Fuqua, Victor H., 92 State Street, Chicago.
Girling, Winthrop, 31 Washington Street, Chicago.

Hargett, Arthur A., 34 Washington Street, Chicago.
Harlan, Paul H., 144 Oakwood Boulevard, Chicago.
Hayes, H. H., 92 State Street, Chicago.
Hurlbut, C. H., 100 State Street, Chicago.
Lawrance, P. I., 175 Dearborn Street, Chicago.
Logan, W. H. G., 785 Winthrop Avenue, Chicago.
Lombard, F. S., Elgin.
MaWhinney, Elgin, 100 State Street, Chicago.
McLemore, W. Y., Mason City.
Menges, Theodore, 146 Franklin Street, Chicago.
Montag, C. F., Blue Island.
Morey, A. E., 31 Washington Street, Chicago.
Nevius, L. W., 92 State Street, Chicago.
Paine, F. A., 739 Larrabee Street, Chicago.
Paine, R. M., 869 N. Clark Street, Chicago.
Palmer, J. V., 92 State Street, Chicago.
Perry, Geo. B., 100 State Street, Chicago.
Reed, L. A., Jacksonville.
Reeves, W. T., 100 State Street, Chicago.
Roach, F. E., 126 State Street, Chicago.
Rogers, A. W., 103 State Street, Chicago.
Sackett, H. R., 92 State Street, Chicago.
Simmons, W. H., Shelbyville.
Slonaker, J. W., 100 State Street, Chicago.
Smith, F. L., 1044 Jackson Boulevard, Chicago.
Temmeman, F. R., Prophetstown.
Vigneron, Eugene, Central Music Hall, Chicago.
Ware, H. A., 204 Cass Street, Chicago.
Warner, C. B., Avon.
West, J. E., Geneseo.
Whitefield, G. W., Evanston.
Zinn, F. H., 100 State Street, Chicago.

Minutes of present session were read and approved.

On motion, the Society adjourned.

A. H. Peck,
Secretary.

1899.

MINUTES

OF THE

EXECUTIVE COUNCIL,

ILLINOIS STATE DENTAL SOCIETY.

The Council met in Parlor H, Palmer House, Tuesday, May 9, and was called to order by the President, Dr. Chas. P. Pruyn, at 10 A. M.

The Secretary's annual report was read and referred to the Auditing Committee, which consisted of Drs. J. G. Reid, R. N. Laurance and S. A. Campbell, appointed by the President.

SECRETARY'S REPORT, 1899.

Mr. President and Gentlemen:

Your Secretary presents the following annual report:

Total active membership at beginning of last meeting		222
New members elected during last meeting		27
		249
Resignations since last meeting	1	
Dropped for nonpayment of dues	20	
Deaths	1—	22
Number of active members at present		227
" nonresident " "		5
" corresponding" "		28
" honorary " "		12
Total membership list at present		272

List of moneys received since last annual report:

For initiation fees and dues	$838.00
" five copies of Transactions	5.00
	$843.00

For which amount the Treasurer's receipts are herewith submitted.

Receipted bills, for which amounts orders have been drawn on the Treasurer during the year, are also herewith submitted.

Dr. C. R. Taylor, of Streator, who was elected to serve as Executive Committee during the year, informed the Secretary that, owing to other duties, it would be impossible for him to serve in that capacity. The Secretary immediately corresponded with the members of the Executive Council in regard to the matter, and as a result Dr. D. M. Cattell, of Chicago, was appointed to serve.

On the recommendation of Dr. E. B. David, of Aledo, a scholarship in the dental department of the University of Maryland was granted Mr. Edward V. Evans, of Aledo. Also a scholarship in the Baltimore Dental College was granted Mr. R. W. Jackson, of Elgin, who was recommended by Dr. Underwood, of Elgin.

Respectfully submitted,

A. H. PECK,
Secretary.

The Treasurer, Dr. E. D. Swain read his annual report which was referred to the Auditing Committee.

TREASURER'S REPORT.

Annual report of Treasurer to the Illinois State Dental Society for year ending May 9, 1899:

Amount on hand last report	$301.19
" received from Secretary A. H. Peck	843.00
	$1,144.19

EXPENDED.

As per vouchers A to O inclusive	$734.62
Cash on hand	409.57
	$1,144.19

Respectfully submitted,

EDGAR D. SWAIN, *Treasurer.*

The annual report of the Publication Committee was read by Dr. A. H. Peck, Chairman. On motion, the report was adopted.

REPORT OF THE PUBLICATION COMMITTEE, 1899.

Mr. President and Gentlemen:

Your committee authorized *The Dental Review* (H. D. Justi & Son, publishers,) to publish such portions of the Transactions of the Society as they desired, and in consideration therefor H. D. Justi & Son paid the expenses of printing for a consideration of $150.

The volume for 1898 appeared about October 1, 1898. There are about forty cloth bound and fifty paper covered copies on hand after the usual distribu

tion to members, colleges, dental societies, libraries, etc. Cost of postage, delivery, etc., is included in the accounts of the Secretary.

Respectfully submitted,

A. H. PECK, *Chairman.*

The President appointed Drs. A. W. Harlan, C. N. Johnson and C. B. Rohland, Committee on Necrology.

On motion by Dr. J. G. Reid, the Treasurer was authorized to pay miscellaneous bills that might be presented during the meeting.

On motion, the Secretary was instructed to extend the usual vote of thanks to the S. S. White Co. for publishing programs, also to the various railway companies for reduced fare, etc.

On motion by Dr. E. D. Swain, the incoming president was appointed to deliver the annual address of the Society at its next regular meeting. Dr. E. D. Swain moved that the secretary's salary be one hundred dollars. Motion supported and carried.

Dr. J. G. Reid spoke of the expenses incurred by the State Board of Examiners in connection with the passage of the new law and requested that an appropriation be made from the funds of the Society to assist in defraying said expenses. Consideration of the matter was postponed for the present.

On motion, the Council adjourned to meet immediately after adjournment of the general session.

Second session was called to order by the President at 1 P. M.

Minutes of the previous session were read and approved.

The Secretary read a communication from Dr. Garrett Newkirk, in which he tendered his resignation as a member of this Society.

Moved by Dr. Swain that the name of Dr. Garrett Newkirk be transferred to the list of nonresident members, and that his resignation be not accepted.

Motion supported and carried.

Dr. Pruyn then read a communication from Dr. F. W. Huxmann regarding the World's Dental Congress to be held in Paris in 1900.

Moved and carried that the communication be laid on the table.

The application for membership of Dr. L. A. Reed, Jacksonville, was referred back to the Board of Examiners.

On recommendation of the Examining Board, Dr. E. J. Perry, Chicago, was by vote reinstated to membership in the Society.

On motion by Dr. E. D. Swain, the Council adjourned to meet at the close of the afternoon session.

Evening session was called to order by the President at 5:30 o'clock.

Minutes of the previous session were read and approved.

The matter of Dr. W. J. Younger's proposed clinic before the Society, was spoken of by Dr. F. H. Gardiner. After some discussion, it was moved by Dr. A. H. Peck that the matter be referred to the Supervisor of Clinics, Dr. L. W. Skidmore. Motion supported and carried.

Dr. E. D. Swain then spoke of the matter of delegates to the World's Dental Congress to be held in Paris in 1900, and moved that the Society send delegates, and that Dr. A. W. Harlan be elected a delegate, with power to select others.

Motion was supported and carried.

On motion, the Secretary was instructed to correspond with the Baltimore colleges as to meaning of provisions regarding scholarships.

Dr. E. H. Allen nominated E. L. Griffith, of Freeport, Ill., for scholarship in the Baltimore Dental College.

Drs. Edmund Noyes, C. B. Rohland, and T. L. Gilmer were

appointed as Nominating Committee to recommend selection of three members for Executive Council for ensuing year to succeed Drs. J. G. Reid, R. N. Laurance, and F. W. Skidmore whose terms expire with the close of this meeting.

On motion, adjourned to meet at the Northwestern University Dental School at 2 P. M. Wednesday.

WEDNESDAY, MAY 10.

Council called to order by the President at 2 P. M. in the Northwestern University Dental School.

Minutes of the previous session were read and approved.

Dr. J. G. Reid presented the following resolution regarding selection of clinicians.

Resolved, That in the future the Supervisor of Clinics confine his invitations for clinicians to the active, nonresident, corresponding and honorary members of the Society, but also may invite reputable nonresident practitioners who are not members of the Society.

Moved by Dr. E. D. Swain that the resolution be adopted.

Motion supported and carried.

Secretary read report of Necrology Committee on the death of Dr. A. W. Freeman.

On motion, the report was adopted.

Dr. F. W. Blomley, Sioux Falls, S. D., was recommended by the Board of Examiners for corresponding membership in the Society.

On motion, he was elected.

It was moved by Dr. R. N. Laurance that $200 be appropriated to the State Board of Dental Examiners to assist in defraying the expenses incurred in the passage of the new law.

Motion supported.

Motion was amended by Dr. A. H. Peck to the effect that the check be drawn payable to the order of Dr. J. G. Reid, and that he be responsible for the proper expenditure of the money.

The amendment being accepted, the motion as amended, was carried.

On motion, adjourned to meet at 6 P. M.

The evening session was called to order by the President at 6 P. M.

Minutes of the previous session were read and approved.

On recommendation of the Examining Board, Dr. A. W. Rogers, of Chicago, was reinstated to membership in the Society.

The Secretary spoke of the case of Dr. O. A. Chappell, of Elgin, who resigned from the Society some years ago.

It was moved by Dr. A. S. Waltz that Dr. Chappell be taken into the Society as a new member.

The motion was supported and carried.

The following officers and committeemen were elected for the ensuing year :

Executive Committee : Dr. E. H. Allen, Freeport.

Committee on Dental Science and Literature : Dr. A. W. Harlan, Chicago.

Committee on Dental Art and Invention : Dr. H. J. Goslee, Chicago.

Member of Examining Board : Dr. C. C. Corbett, Edwardsville.

Committee on Ethics : Dr. C. B. Powell, Jacksonville; Dr. F. H. McIntosh, Bloomington; Dr. M. R. Harned, Rockford.

Supervisor of Clinics : Dr. J. E. Hinkins, Chicago.

Secretary : Dr. A. H. Peck, Chicago.

Treasurer : Dr. C. N. Johnson, Chicago.

Librarian : Dr. H. A. Potts, Bloomington.

Local Committee of Arrangements : Dr. G. H. Henderson, Springfield, chairman.

Dr. J. G. Reid, Chairman of the Auditing Committee, reported the accounts of the Secretary and Treasurer to be correct.

On motion, adjourned to meet at the Chicago College of Dental Surgery, Thursday, May 11.

Thursday session was called to order by the President at 3 P. M.

Minutes of the previous session were read and approved.

On recommendation of the Examining Board, Dr. Gilman T. Smith, of Springfield, Ill., was elected an honorary member of the Society.

Dr. J. G. Reid read a communication from the dental colleges of Chicago.

On motion, it was referred to the Society for action.

On motion, the name of Dr. E. L. York was changed from the active to the corresponding list of members.

The Secretary read a communication from Dr. E. H. Stewart, of Joliet.

On motion, it was referred for final action to the incoming President, Secretary and Treasurer.

It was moved and carried, that the names of delinquent members should not be read to the Society, but that they should be notified of their delinquency, and all failing to remit within thirty days after notification should be dropped from the membership list.

At various times during the meeting the Secretary read the following names, all of which were favorably reported by the Examining Board, and by vote of the Council were declared elected to active membership in the Society:

Barber, H. B., Naperville.
Brown, Frank N., 100 State Street, Chicago.
Brown, J. O., 100 State Street, Chicago.

Bennington, E. K , 55 Fifty-third Street, Chicago.
Chappell, O. A., Elgin.
Clark, W. G., Lakota Hotel, Chicago.
Cruise, R. J., 1560 Jackson Boulevard, Chicago.
Davis, T. A., Warsaw.
Dunn, J. E., 100 State Street, Chicago.
Edwards, L. A., 257 Thirty-first Street, Chicago.
Elmer, A. J., Rochelle.
Ewing, J. W., 728 Forty-seventh Street, Chicago.
Fernandez, E. M. S., 34 Washington Street, Chicago.
Fouser, J. R., Joliet.
Fowler, W. F., 126 State Street, Chicago.
Fuqua, Victor H., 92 State Street, Chicago.
Girling, Winthrop, 31 Washington Street, Chicago.
Hargett, Arthur A., 34 Washington Street, Chicago.
Harlan, Paul H., 144 Oakwood Boulevard, Chicago.
Hayes, H. H., 92 State Street, Chicago.
Hurlbut, C. H., 100 State Street, Chicago.
Lawrance, P. I., 175 Dearborn Street, Chicago.
Logan, W. H. G., 785 Winthrop Avenue, Chicago.
Lombard, F. S., Elgin.
MaWhinney, Elgin, 100 State Street, Chicago.
McLemore, W. Y., Mason City.
Menges, Theodore, 146 Franklin Street, Chicago.
Montag, C. F., Blue Island.
Morey, A. E., 31 Washington Street, Chicago.
Nevius, L. W., 92 State Street, Chicago.
Paine, F. A., 739 Larrabee Street, Chicago.
Paine, R. M., 869 N. Clark Street, Chicago.
Palmer, J. V., 92 State Street, Chicago.
Perry, Geo. B., 100 State Street, Chicago.
Reed, L. A., Jacksonville.
Reeves, W. T., 100 State Street, Chicago.
Roach, F. E., 126 State Street, Chicago.
Rogers, A. W., 103 State Street, Chicago.
Sackett, H. R., 92 State Street, Chicago.
Simmons, W. H., Shelbyville.
Slonaker, J. W., 100 State Street, Chicago.
Smith, F. L., 1044 Jackson Boulevard, Chicago.
Temmeman, F. R., Prophetstown.
Vigneron, Eugene, Central Music Hall, Chicago.
Ware, H. A., 204 Cass Street, Chicago.
Warner, C. B., Avon.
West, J. E., Geneseo.
Whitefield, G. W., Evanston.
Zinn, F. H., 100 State Street, Chicago.

A. H. Peck,
Secretary.

The Illinois State Dental Society, in Annual Convention assembled, pauses in its deliberation to pay a merited tribute of respect to the memory of those who, during the past year, have been taken from its rolls and transferred to the throngs of the Great Beyond.

IN MEMORIAM.

DR. A. W. FREEMAN, CHICAGO.

WHEREAS, In the past year death has removed from us Dr. A. W. Freeman, one of the organizers of this Society, therefore, be it

Resolved, That the Illinois State Dental Society, in session assembled, wish to record our appreciation of his many excellent qualities as a man and as a dentist; that we appreciate his efforts on behalf of associated work in the profession, and especially in this State where he was among those who organized the two oldest societies in the State, the Chicago Dental Society, of which he was a charter member, and the State Society.

Dr. Freeman was born in Brookfield, Vt., a country town in Orange County, October 3, 1829. The atmosphere of the district school for the child, and the county grammar school for the youth, a preparatory for college, was the stimulating influence under which he opened his eyes when first he was ushered into this mortal life. This early school life resulted in his entering Dartmouth College in the fall of 1849. He completed the course of four years, required of students in those days, working his way by teaching district school, and graduated with honors in 1854. During the following year he was principal of the Orange County grammar school, at Randolph, Vt.

In 1855 he came to Rockford, Ill., and he was the principal of Rockford public high school, and was thus engaged for several years. His mind turning toward a professional life, he became engaged in reading along medical lines, and for some time was under the tutorship of one of the physicians of Rockford. In the course of his study he became interested in dentistry and so chose it for his life work, being an earnest student of this department of medical science until his death. He gave his entire interest to the betterment of his profession and the elevation of the standard of dental education.

Removing to Chicago in 1859, he commenced the practice of dentistry and gathered around him a patronage which remained with him until the close of his long professional life. For forty years he witnessed the marvelous development of dentistry, rejoicing in its attainments and triumphs.

His life has ever been that of a devoted follower of high ideals, and a promoter of the best things pertaining to the public welfare; ever striving to forward the interests of his profession and that of the community in which he lived. His later years were years of bodily pain and suffering; but through them all he has been cheerful and of a happy, genial, hopeful mind, shedding forth a radiance of Christian fortitude and trustfulness. To those who knew him best he leaves a memory of one who inspired them to loftier purposes and more earnest efforts in the work of influencing humanity to take a higher standard of living and thinking.

Dr. Freeman died on February 23, at his residence in Normal Park, Ill., after a brief illness, passed out of this life into the great unknown. He leaves a widow and two daughters to mourn for him. The interment was at Forest Home.

A. W. HARLAN,
C. N. JOHNSON, } *Committee.*
C. B. ROHLAND,

IN MEMORIÁM.

Austin, J. F.
Baker, D. B.
Bushong, E. W.
Call, E. B.
Chase, H. S.
Davis, E. F.
Dean, M. S.
Eames, W. H.
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George, Isaac.
Hand, M. F.
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Hawxhurst, D. C.
Hendel, D. W.
Henry, Charles.
Hilton, John.
Hunter, Henry Louis.
Ingersoll, L. C.
Judd, Homer.
Keely, George W.
Kulp, W. O.
Lewis, C. W.
Lewis, H. N.
Magitot, E.
Morrison, A. M.
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Park, Edgar.
Patrick, J. J. R.
Reed, Thos. W.
Reynolds, J. S.
Rivers, C. W.
Sawyer, Charles K.
Sillimann, H. H.
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